

INTEGRATED ANSWERING TELEPHONE

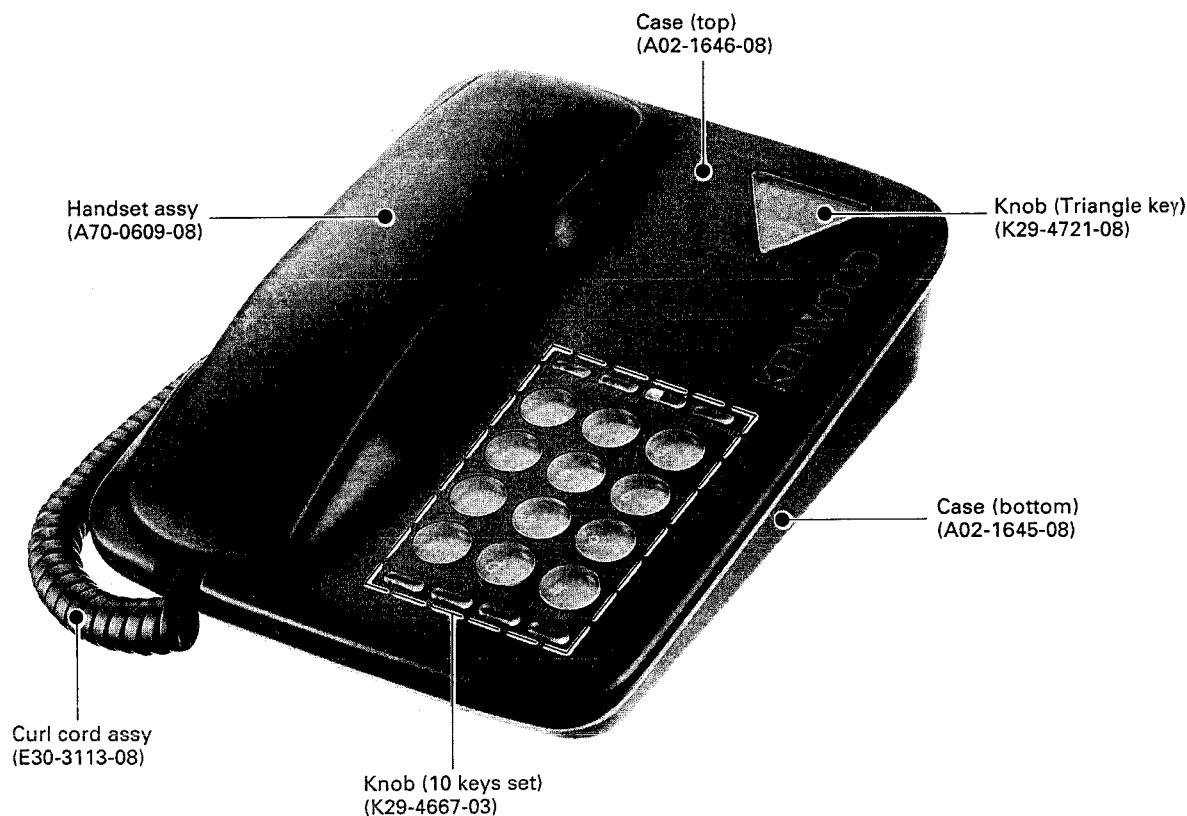
IS-M40

SERVICE MANUAL

KENWOOD

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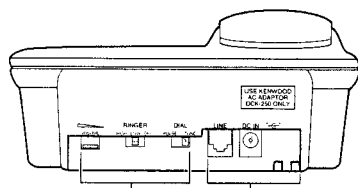
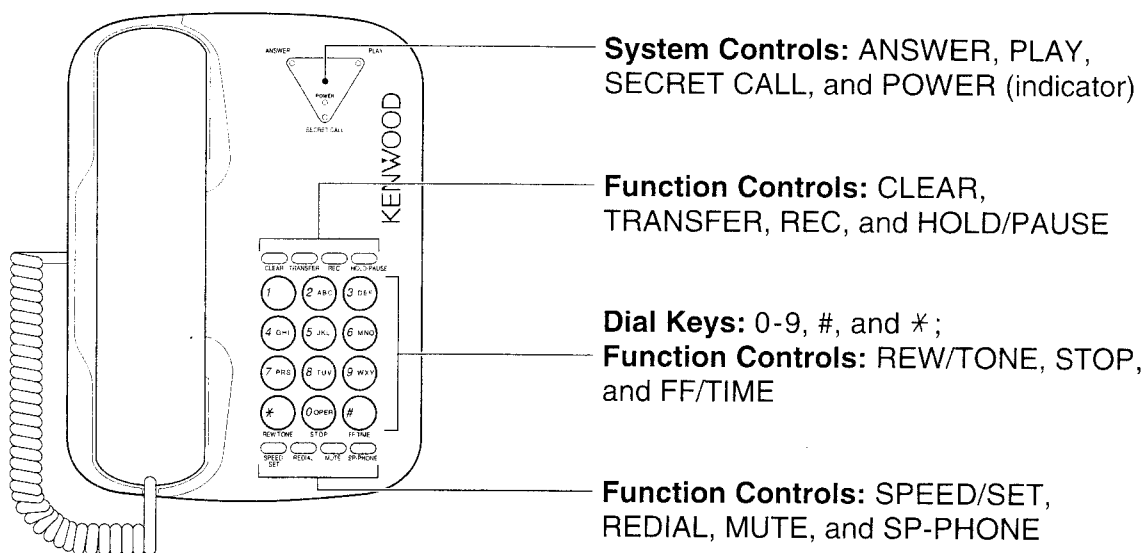
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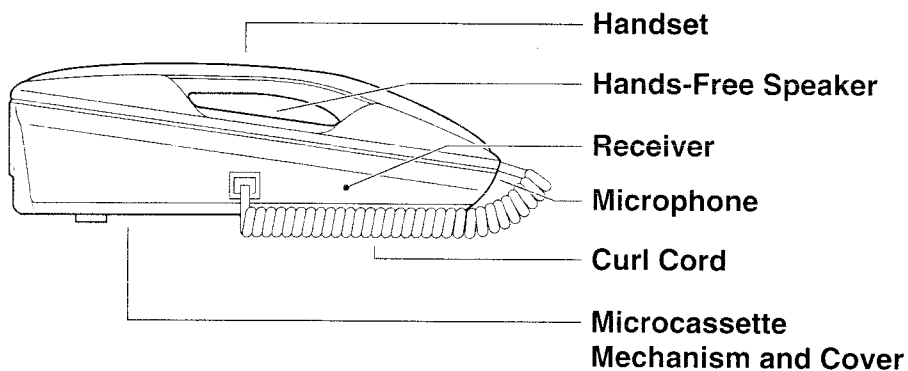
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CONTROLS



Rear Connections: LINE, DC IN, and AC Adapter Cord Hook

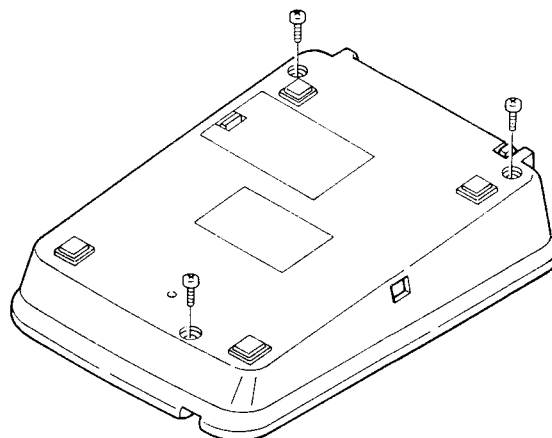
Rear Controls: VOLUME (Speaker), RINGER (Loudness), and DIAL (Mode)



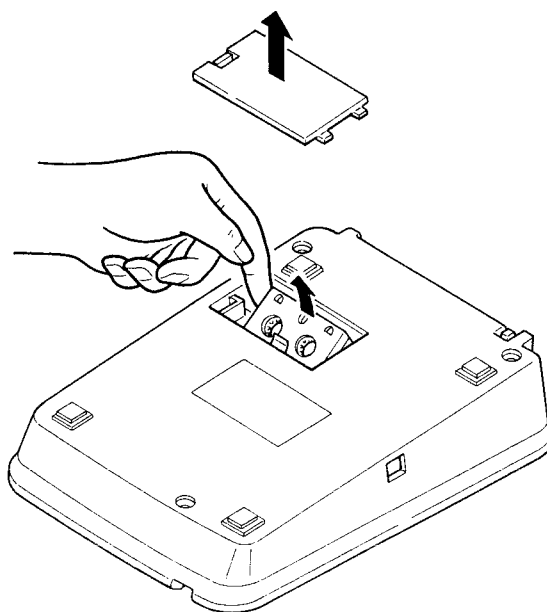
Note: Disconnecting the ac adapter or losing ac power will cease IS-M40 operation.

DISASSEMBLY FOR REPAIR

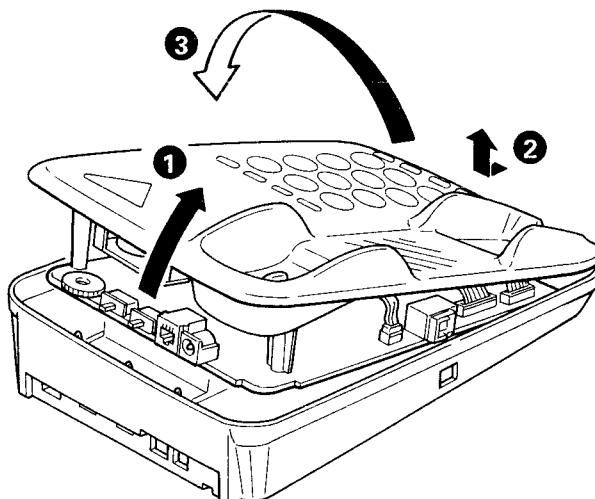
1. Remove the three screws holding the case.



2. Remove the cassette.



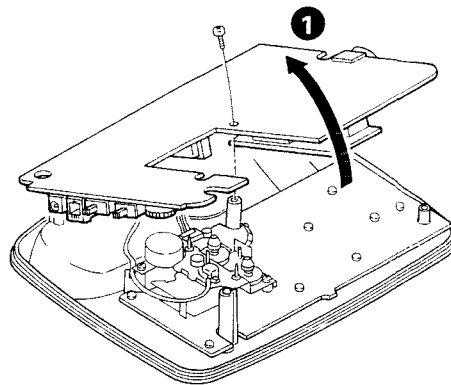
3. Lift the top half of the case away from the bottom half in the order of ① to ②, and remove it in the direction of arrow ③.



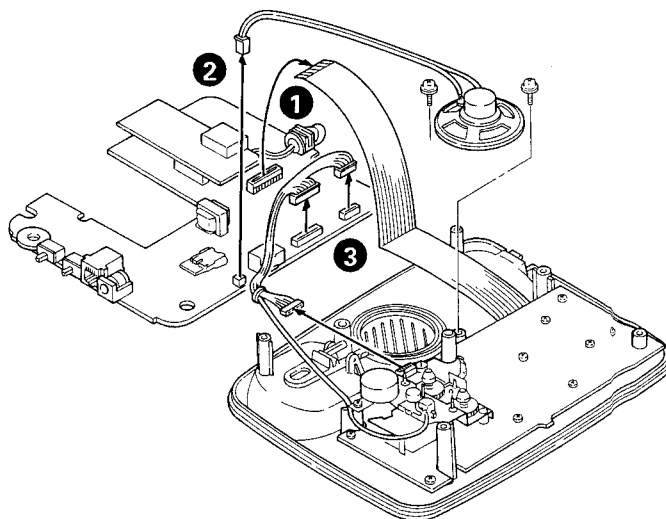
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DISASSEMBLY FOR REPAIR

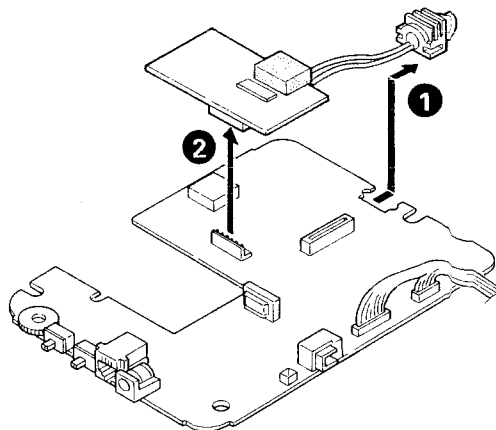
4. Remove the single screw holding the main PCB assembly, and remove the assembly in the direction of arrow ①.



5. The main PCB assembly can be separated by disconnecting the connectors of the FPC ①, SP ②, and cassette mechanism ③.

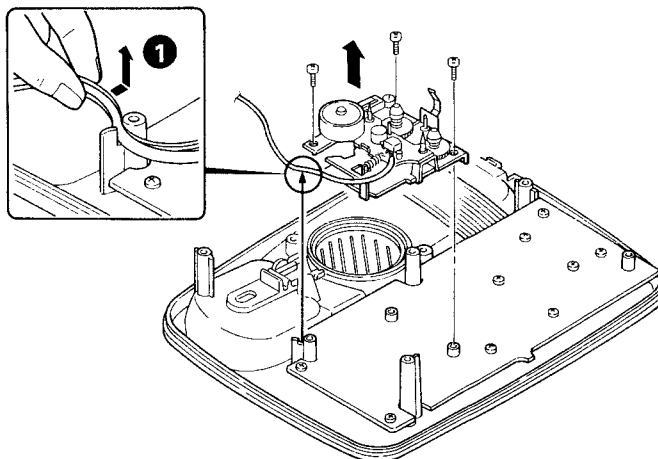


6. Remove the hands-free PCB in the order of ① to ②.

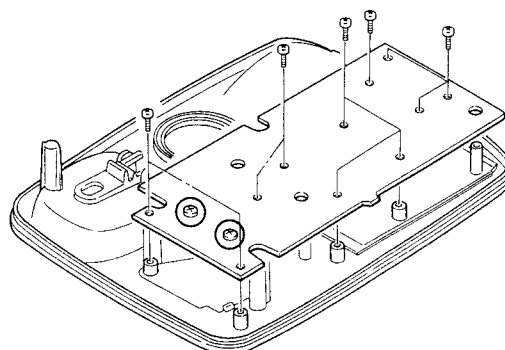


DISASSEMBLY FOR REPAIR

7. Remove the three screws holding the cassette mechanism, lift the cable in the direction of arrow ①, and remove the cassette mechanism.

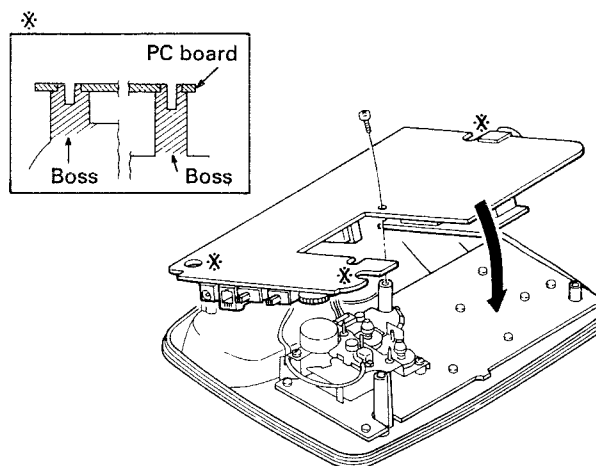


8. Remove the key PCB assembly on the side of the top half of the case by removing the 11 screws.



9. Reassemble the telephone by reversing the disassembly (8 to 1).

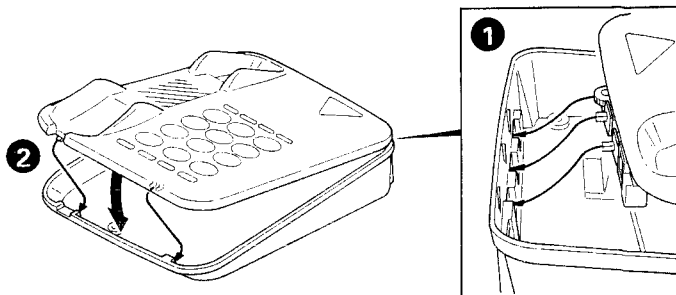
* Position the parts indicated by asterisks (*) accurately, then tighten the screw.



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DISASSEMBLY FOR REPAIR/ HOW TO RESET THE MICROCOMPUTER

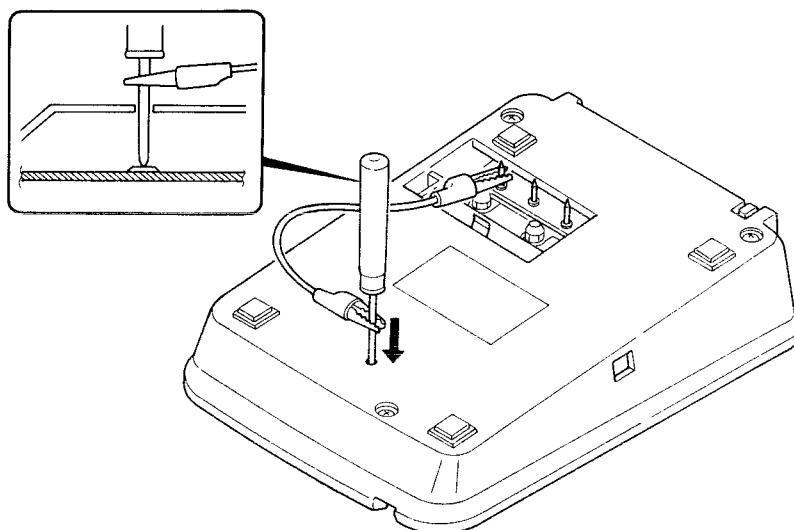
10. To join the top and bottom halves of the case, fit the rear side first **1**.



How to reset the microcomputer

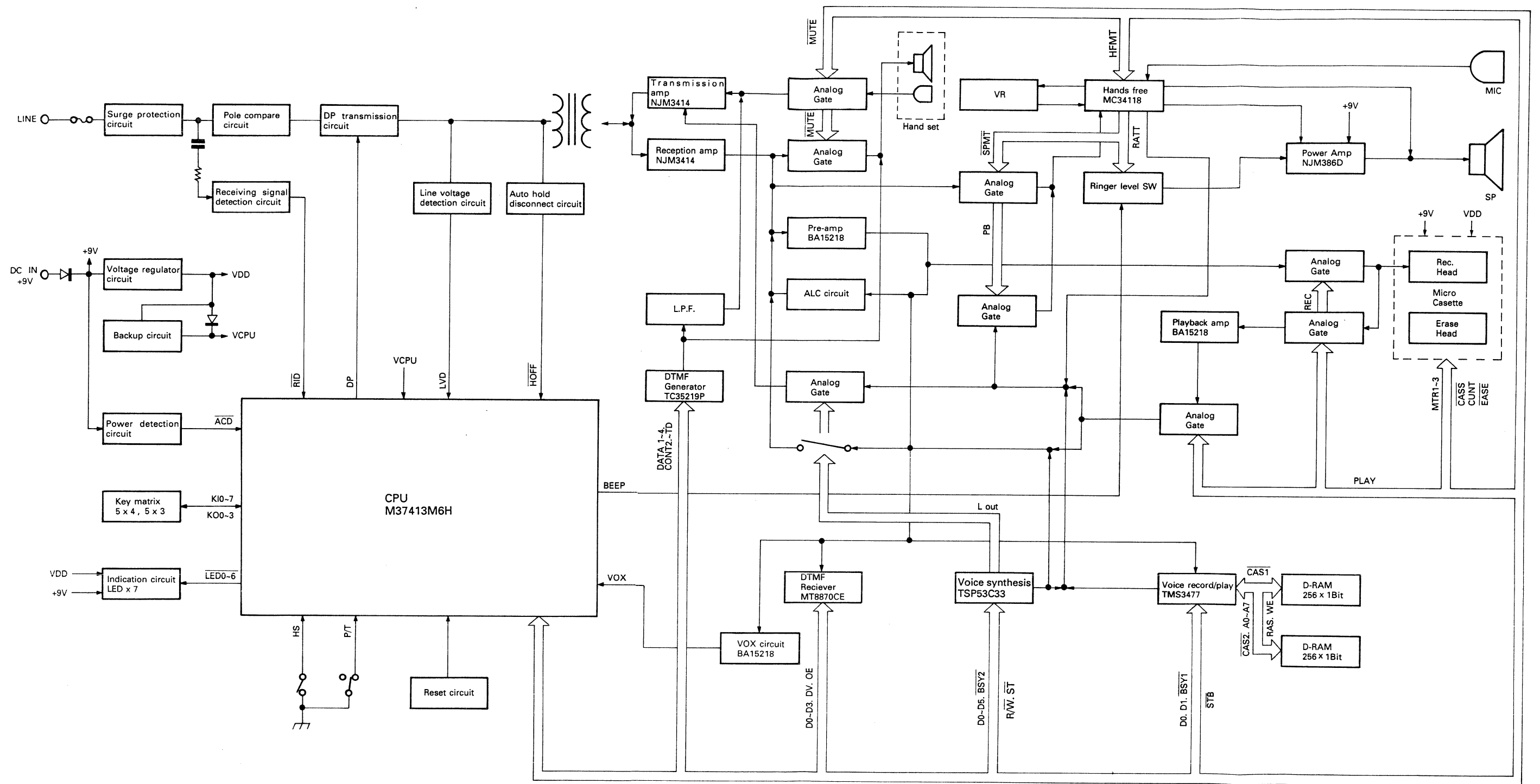
To reset the microcomputer to its initial (factory set) state, do the following:

1. Open LINE and DC IN.
2. Insert a thin metal rod into the small hole in the bottom half of the case so that the tip of the rod touches the reset pattern on the main PCB.
3. Connect the lead with clips at both ends to the receiver ground (a metal part of the cassette mechanism).



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BLOCK DIAGRAM



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CIRCUIT DESCRIPTION

1. Description of CPU

This telephone uses on M37413M6H, which is an 8 bit single-chip microcomputer consisting of a CPU, ROM, RAM, I/O ports, timer, serial I/O ports, and interrupt circuitry.

• Features

- 256 x 8 byte RAM
- 12288 x 8 byte ROM
- 68 I/O lines
 - Input pins (12)
 - CMOS I/O pins (24)
 - Middle-voltage N-ch open drain I/O pins (32)
- Interrupt function
 - External interrupts : 3
 - Internal timer interrupts : 3
 - Serial I/O interrupt
 - Analog-to-digital conversion interrupt
 - Key-on wakeup interrupt
- 8 bit timer : 4 (3 when serial I/O is used)

- 16 bit timer
- 8 bit serial interface
- Built-in clock generation circuits : 2 (ceramic and crystal)
- Standby operation
- Minimum instruction execution time
 - 1 μ s (8MHz clock high-speed mode, 5V)
 - 8 μ s (1MHz clock high-speed mode)
- CMOS
- Low power consumption
- 80 pin flat plastic package

2. Termination

• Ringer circuit

A call signal from the telephone line enters the termination detection circuit, which reports it to the CPU. The CPU produces a ringing tone and outputs it from the speaker via the power amplifier.

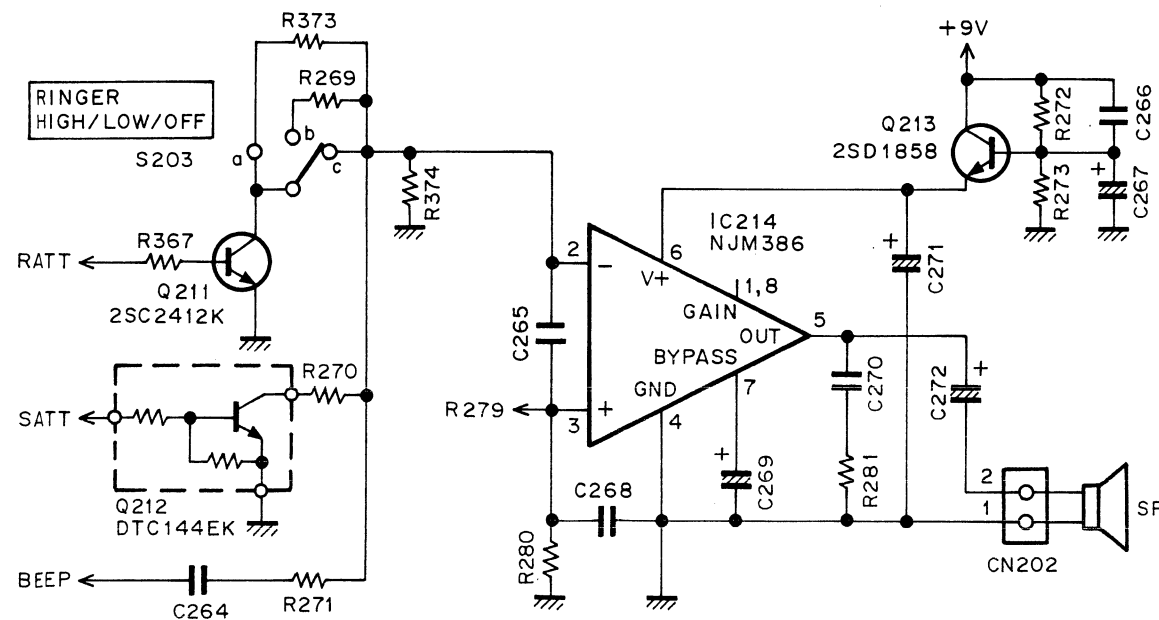


Fig. 1 Ringing tone output circuit

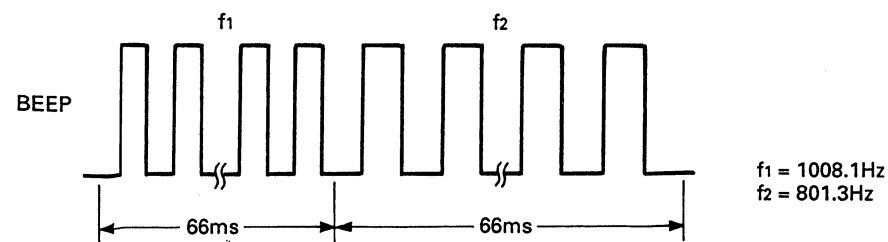


Fig. 2 Ringing signal waveform

CIRCUIT DESCRIPTION

• Termination detection circuit

When a call signal comes in from the line, the termination detection circuit passes it through C216 for DC current cutting, and D206 and D207 for detection voltage adjustment, and inputs it to PH201. PH201 makes $\overline{\text{RID}}$ low. When $\overline{\text{RID}}$ goes low, the CPU produces a ringing tone, makes the illumination output port (LED5) and beep attenuation output port (SATT) low, and makes the ringing tone setting output port (RATT) high.

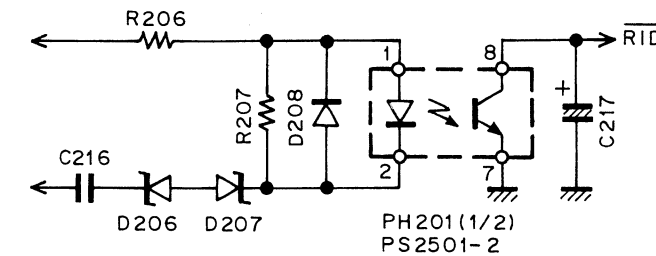


Fig. 3 Termination detection circuit

3. Calling

A call is made by IC205 and the DP transmission circuit. When calling, the transmit/receive mute output (MUTE) is low, and the handset microphone and speaker are disconnected from the line.

The select signal can be switched between tone and pulse.

• DP transmission

If the select switch is set to PULSE, the specified pulse is output from the CPU to turn PH202 and Q202 on or off, connect or disconnect the line, and transmit the dial signal.

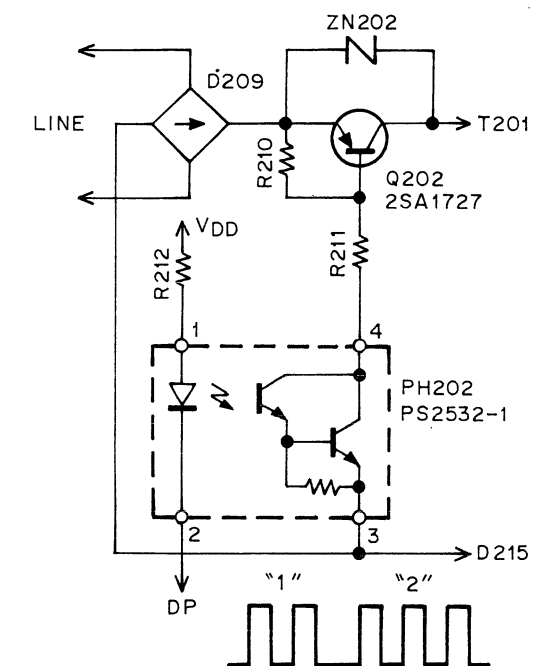


Fig. 4 DP transmission circuit

If the select switch is set to TONE, or if the select switch is set to PULSE and "*" is pressed, the synthesized signal of high- and low-frequency groups corresponding to the dial key is output from IC205 TONE.

The DTMF signal amplified by IC202 is transmitted to the line through T201.

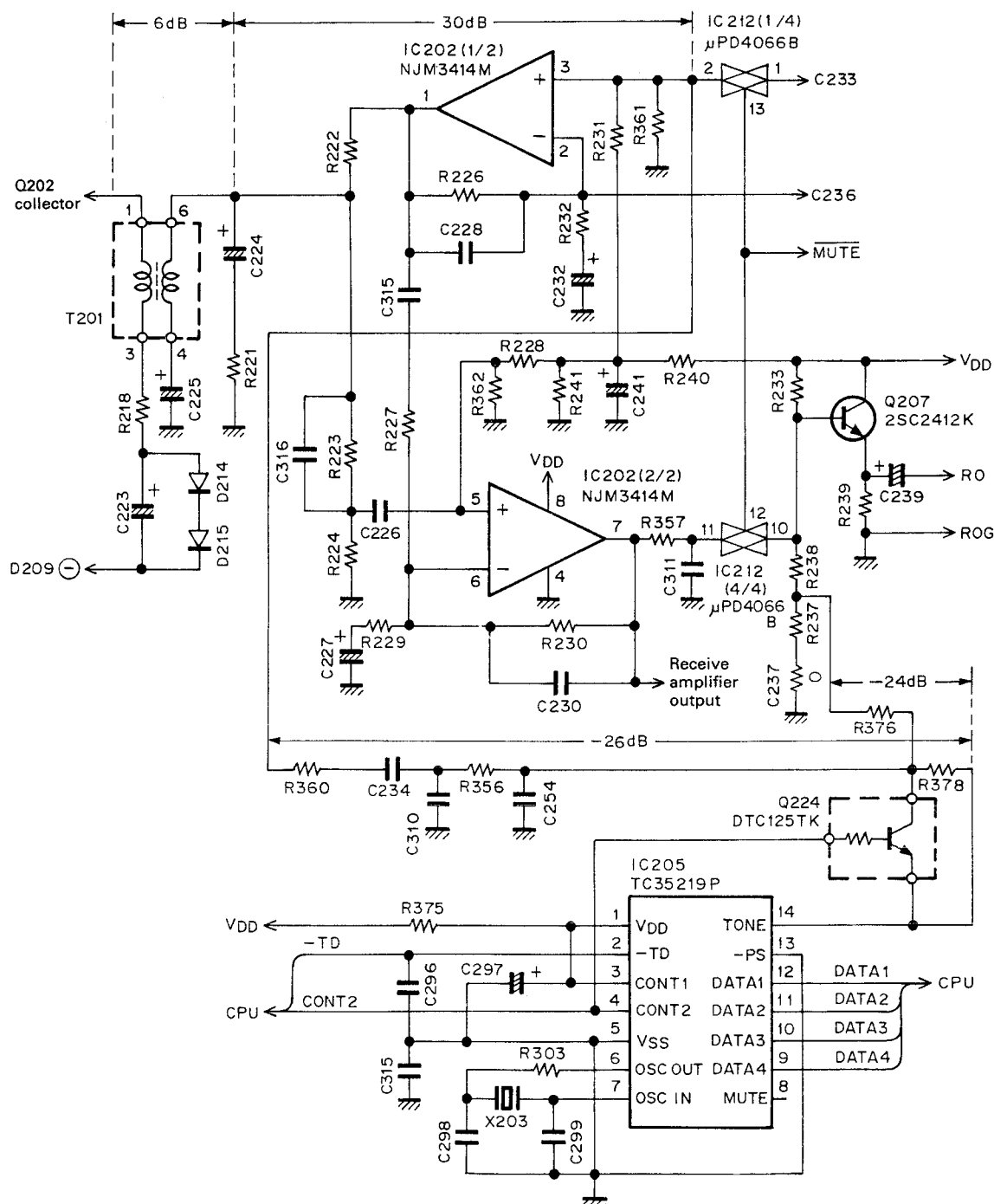


Fig. 5 PB transmission circuit

CIRCUIT DESCRIPTION

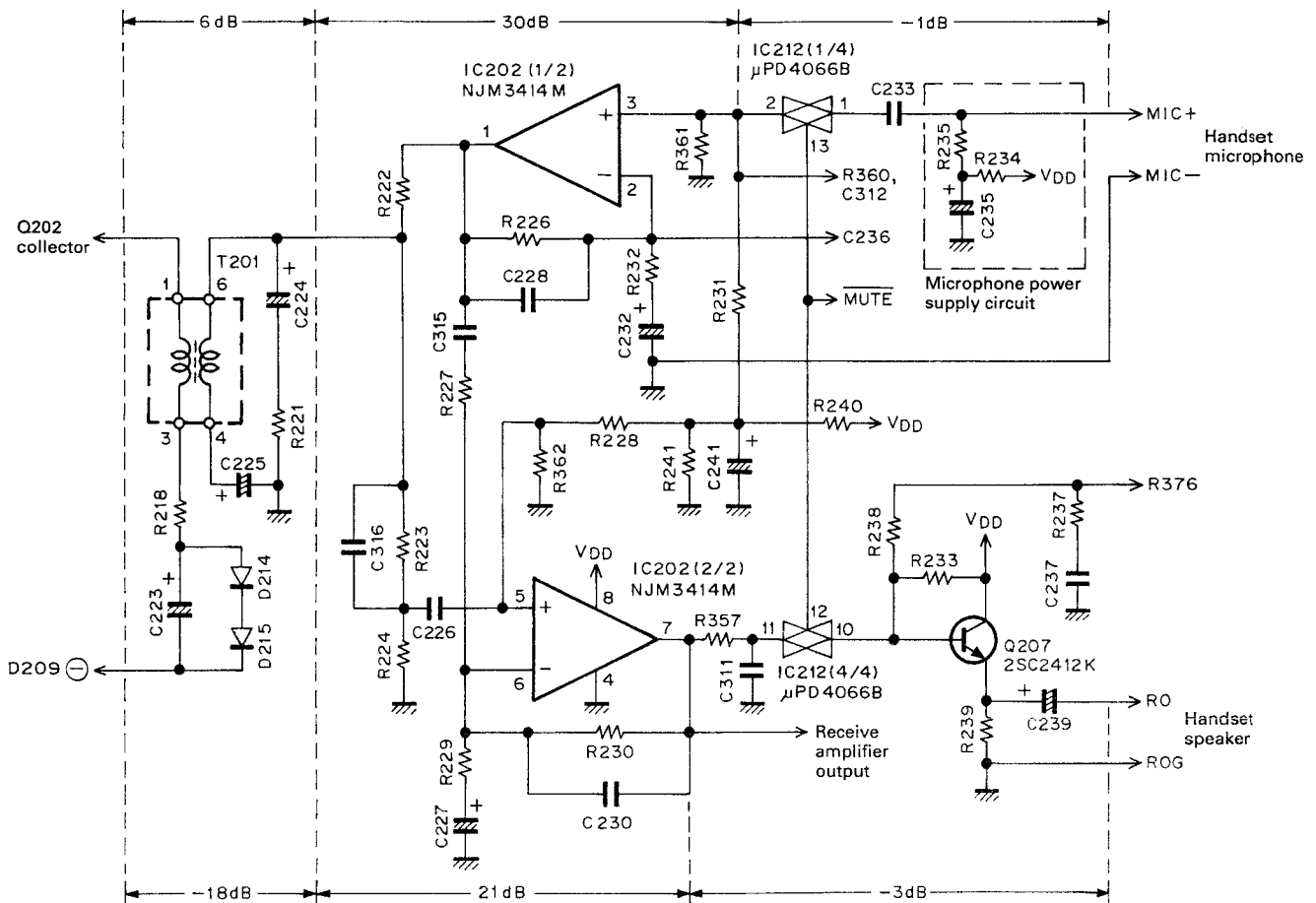
4. Conversation

The voice input from the handset microphone is amplified by IC202, and output to the line through T201.

The signal from T201 is amplified by IC202, passes through Q207, and is output to the handset speaker. The transmit signal is separated from the receive signal by canceling the signal input through R233 and the transmit signal input through C315 and R227.

• Conversation circuit

The gain for the transmit/receive circuit is distributed as shown in Figure 6. Since the handset microphone uses a capacitor, the current is supplied by the microphone power supply circuit.



CIRCUIT DESCRIPTION

Handsfree

For handsfree reception, the SPMT signal from the receive circuit is made high, and the voice signal is output to the speaker through IC401 (handsfree IC) by IC214 (power amplifier). At the same time, MUTE is made low, and the handset microphone is released to prevent the voice from feeding back to the microphone from the speaker.

For transmission, the voice signal from the handsfree microphone is amplified by IC401, LOUT is made high, and the signal output to the line through IC202 and T201.

To switch between handsfree transmission and reception, the receive input level (RLI1), receive output level (RLI2), transmit input level (TLI2), and transmit

output level (TLI1) are compared by IC401, and one of three modes, (transmission, reception, or muting), is determined. Transmit mode is set if the transmit input level is higher than the receive input level and there is a transmit output. Receive mode is set if the receive input level is higher than the transmit input level and there is a receive output. If the transmit signal level equals the receive signal level, or if there is no transmit or receive signal, muting is enabled.

If the MUTE button is pressed, HFMT goes high, and the microphone amplifier is disconnected to inhibit transmission.

The speaker volume is changed by controlling the IC401 attenuator by the VLC direct current.

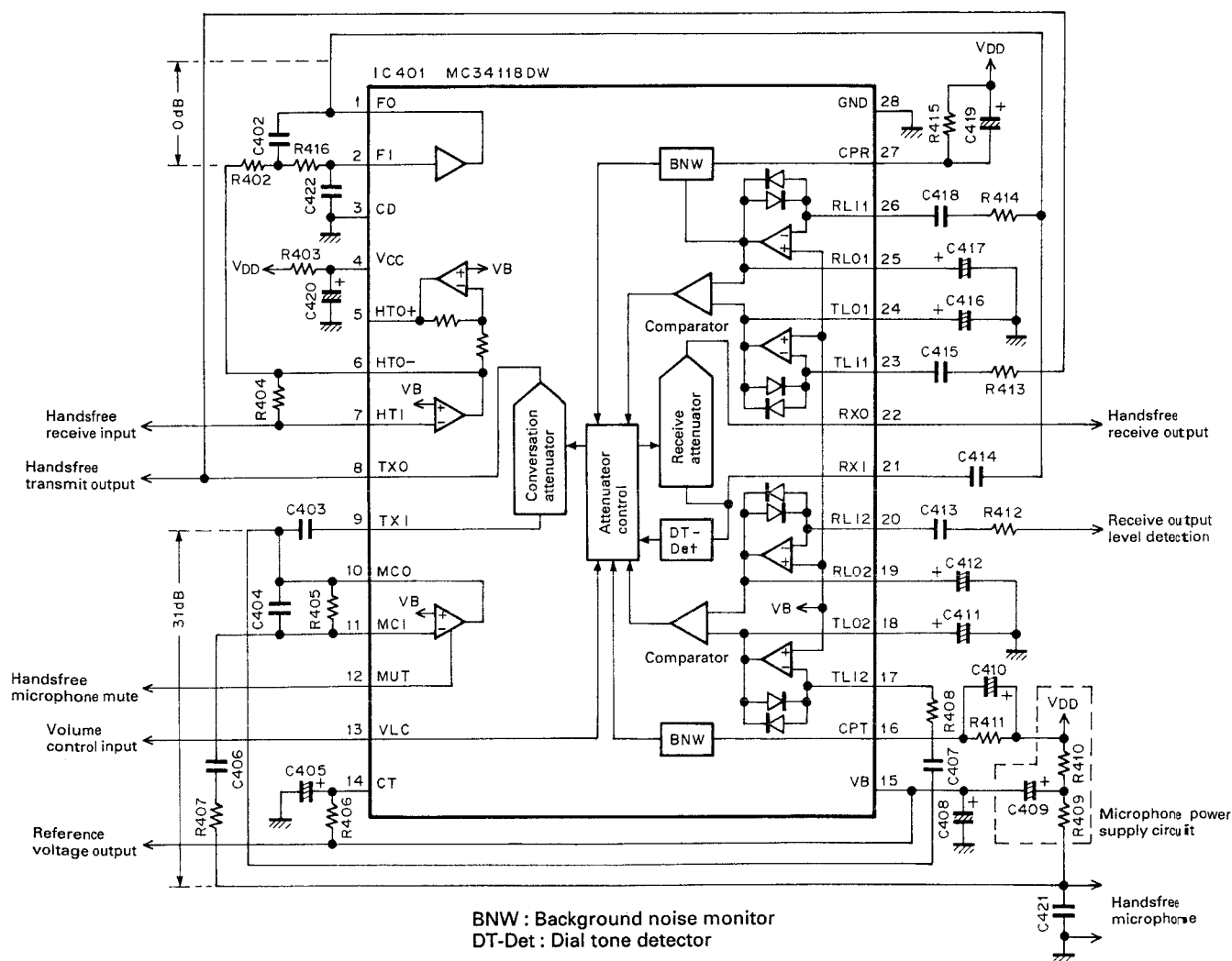


Fig. 7 Handsfree circuit

CIRCUIT DESCRIPTION

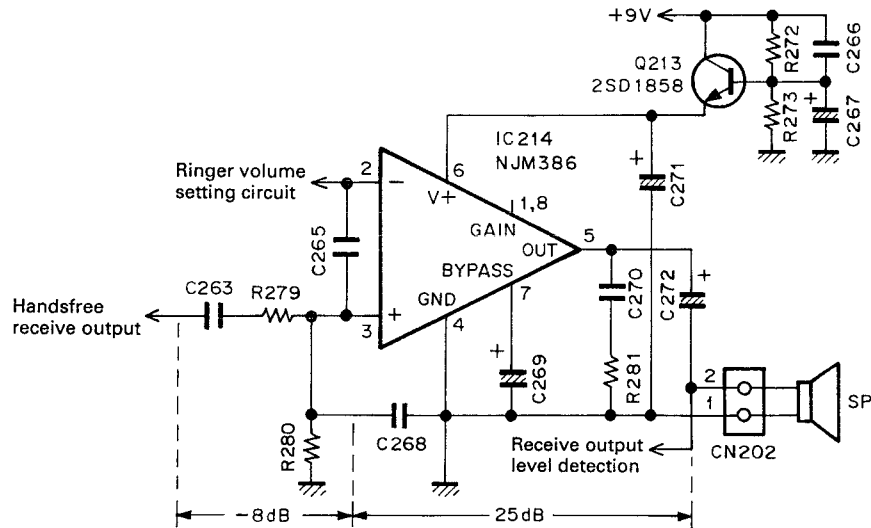


Fig. 8 Speaker circuit

- Hold**

MUTE and LINE are low during hold to suppress the voice signal from the line and the handset microphone. This telephone contains a hold cancel circuit. Hold is automatically canceled by using the fact that if a branched telephone is set offhook, the telephone line voltage falls.

If the voltage at point (A) in Figure 9 falls continuously by 0.6V or more, Q204 turns on for the time determined by the time constant of R213 and C219, and C222 is changed through R214. If the voltage at (B)

becomes 0.6V or higher, Q205 turns on, PH201 turns off, HOFF goes high, and the CPU recognizes the branch and cancels hold automatically. D213 is a Q204 protection diode, C220 is a capacitor for noise suppression, and C221 is a capacitor for preventing oscillation at low temperature.

The hold cancel circuit can also detect the trunk switching pulse. When it detects this pulse, Q206, Q220, and PH201 turn off, and HOFF goes high.

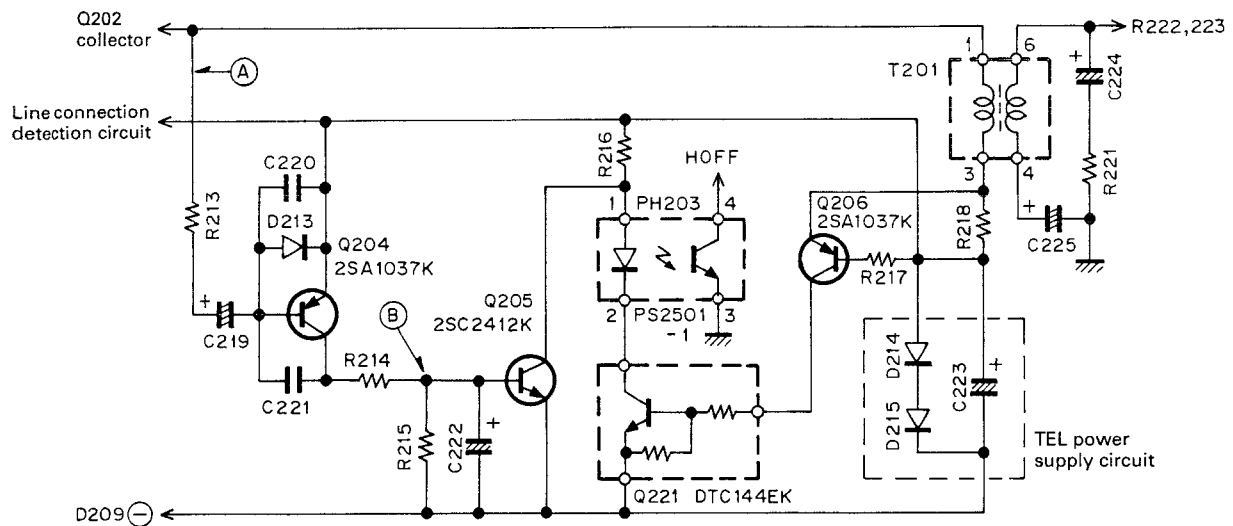


Fig. 9 Hold cancel circuit

CIRCUIT DESCRIPTION

5. Recording

When the voice is input from the handset microphone, RCMT goes high, the signal from the microphone goes to IC202, returns from pin 7 of IC202, passes through IC203, and is recorded. PB goes low.

For the termination message and recording with the remote controller, the signal follows the same route as when it is input from the handset microphone except that the voice is input from the line.

Since the input level is not constant, the signal is passed through the ALC amplifier to make the recording level constant, then recording starts.

The attack time (line input $-40\text{dBm} \rightarrow -20\text{dBm}$) is 32ms and the release time (line input $-20\text{dBm} \rightarrow -40\text{dBm}$) is 0.7 seconds.

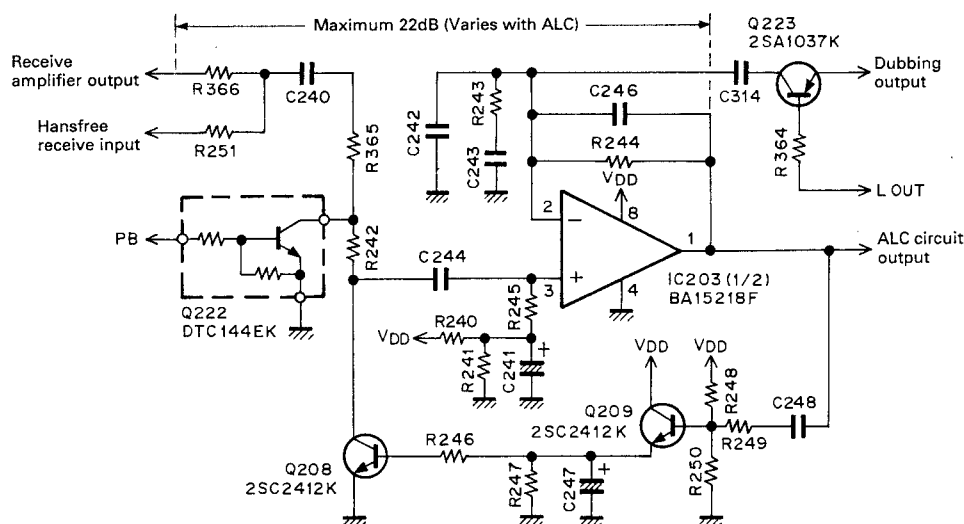


Fig. 10 ALC circuit

• Microcassette recording

For microcassette recording, REC goes high, and the signal goes to the recording head through IC203. The high-frequency range is emphasized by C273 and R282 to adjust the recording frequency characteristics. The recording head bias current is about $220\mu\text{A}$ (DC).

The recording frequency characteristics when a -20dBV signal is input are shown in Figure 12.

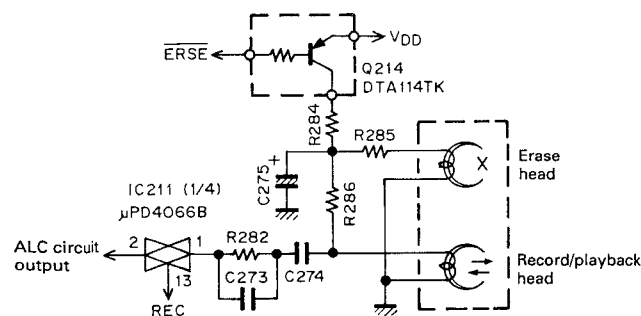


Fig. 11 Microcassette recording circuit

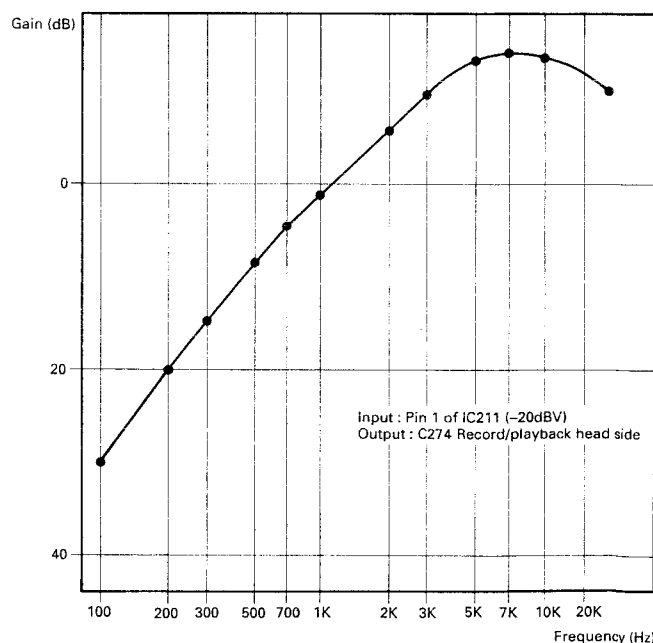


Fig. 12

CIRCUIT DESCRIPTION

• Recording of greeting message

When a greeting message is recorded, it follows the same signal route as for microcassette recording, passes through a CR filter from IC203, and enters IC210. The voice is digitized to digital data using IC210 by the CVSD method, and is stored in two 256K bit DRAM. The data bit rate is 30.1K bits/second.

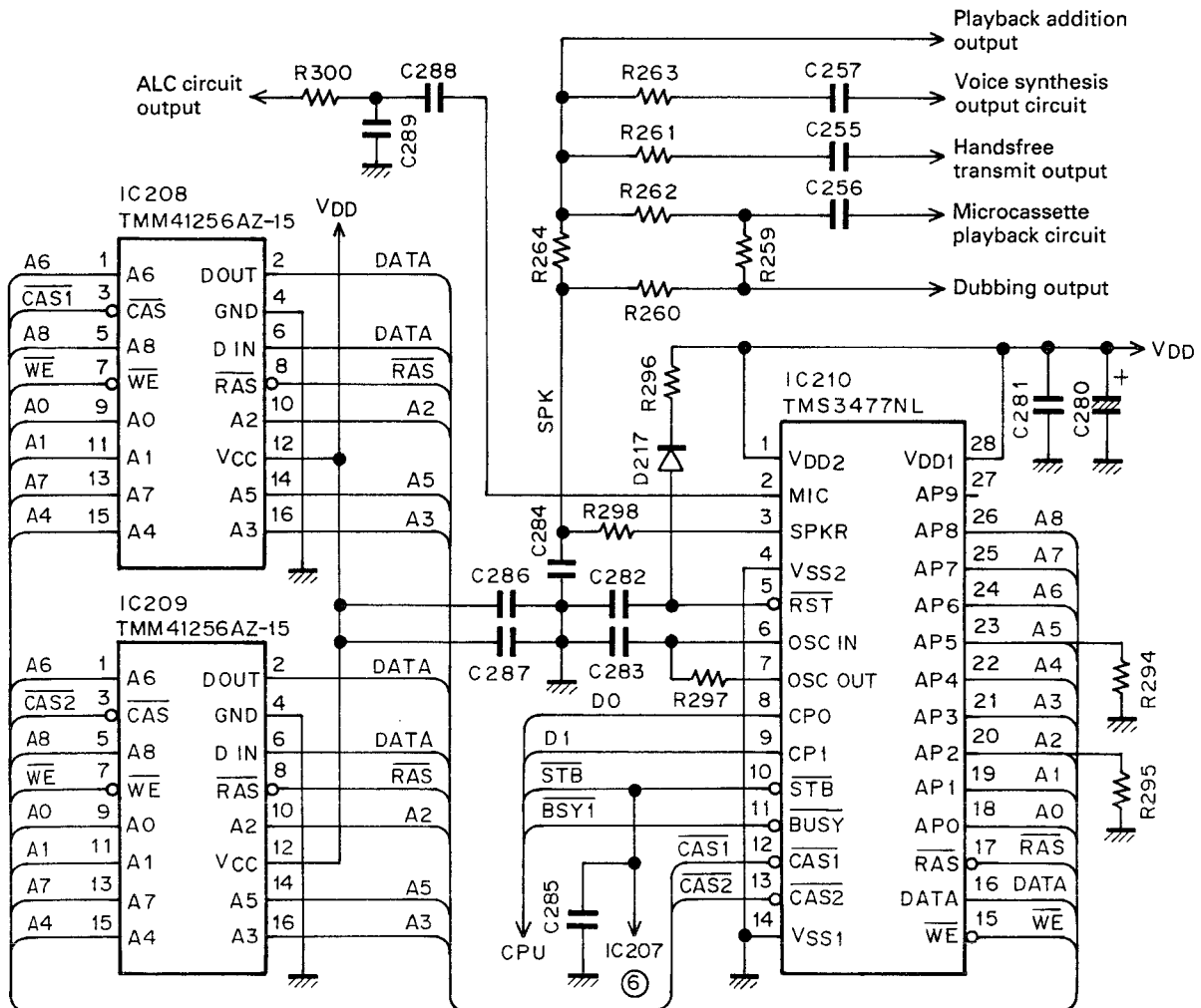


Fig. 13 Greeting message recording circuit

CIRCUIT DESCRIPTION

6. Playback

For playback, the signal from IC203 and IC210 is output to the line through IC202 and T201, and output to the speaker through IC401 and IC214.

• Microcassette playback

For microcassette playback, PLAY goes high, and the signal from the record/playback head is input to IC203. When the signal is played back and output to

the line, LOUT goes high, and the output from IC203 is input to IC202 and transmitted to the line through T201. When the signal is played back and output from the speaker, PB goes high, and the signal is output to the speaker through IC401 and IC214.

The playback frequency characteristics when a -80dBV signal is input are shown in Figure 15.

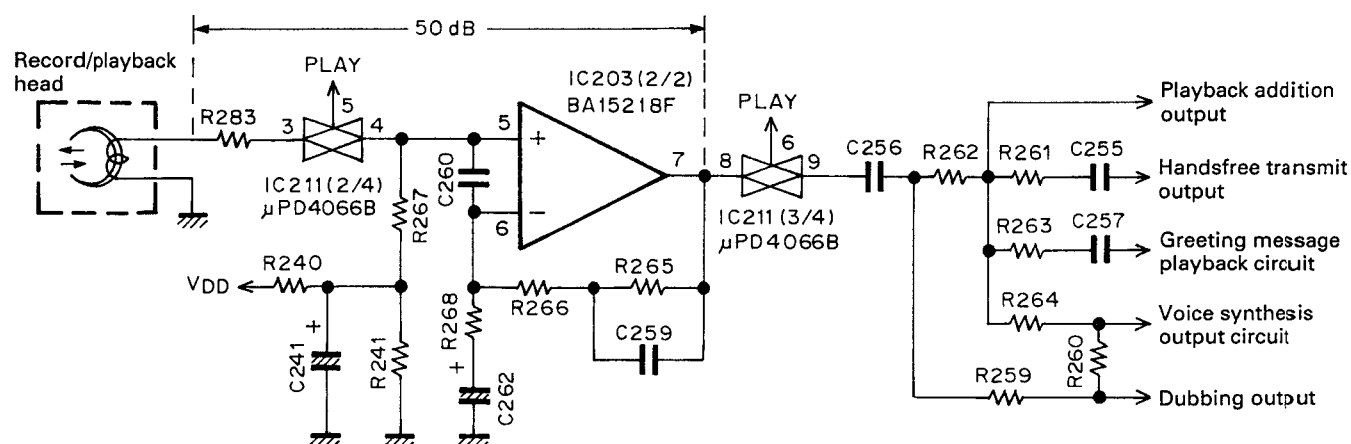


Fig. 14 Microcassette playback circuit

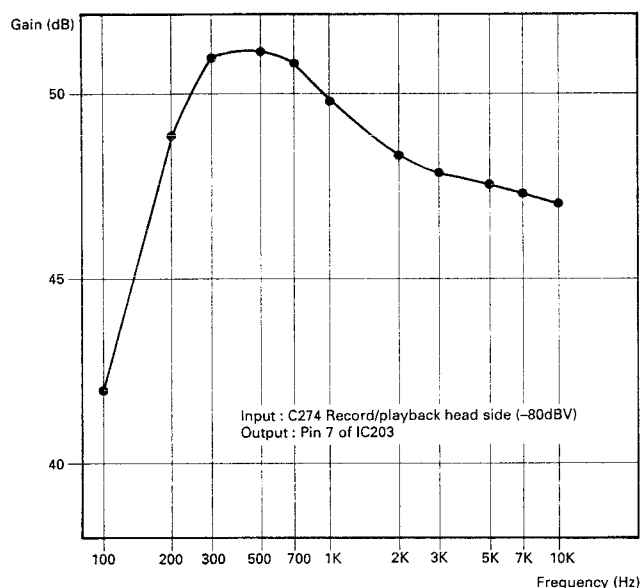


Fig. 15

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CIRCUIT DESCRIPTION

• Playback of greeting message

To playback a greeting message, the digital data stored in two DRAM is converted to an analog signal by IC210, and the waveform is rectified by a low-pass filter consisting of a capacitor and a resistor. If the signal is played back and output to the line, LOUT goes

high and the signal is output to the line through IC202 and T201. If the signal is played back and output to the speaker, PB goes high, and the signal is output to the speaker through IC401 and IC214.

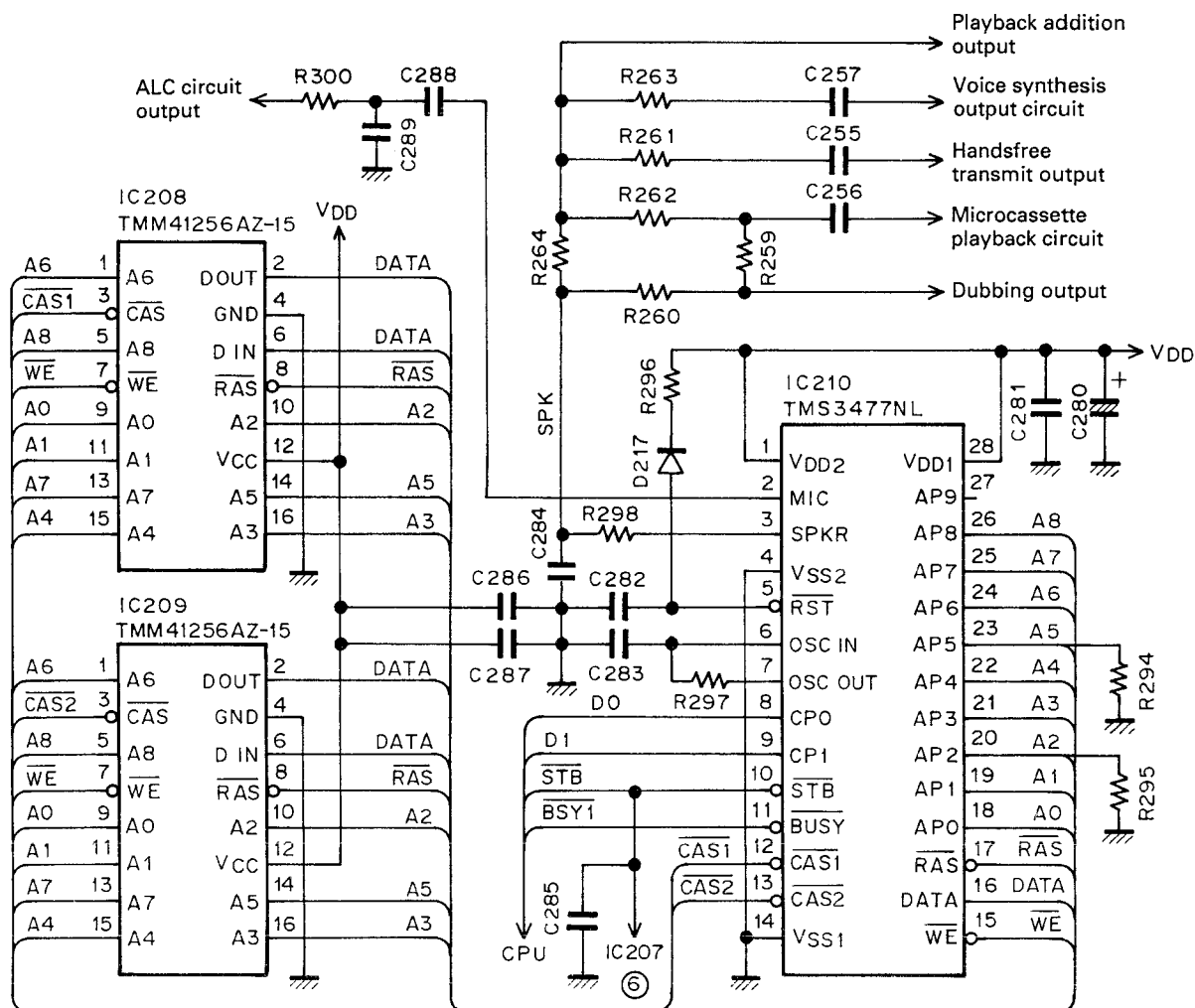


Fig. 16 Greeting message playback circuit

7. Erasing

The data is erased by making $\overline{\text{ERSE}}$ low and passing DC current through the erase head for about 6.8mA. REC goes low so that no signal is recorded on the tape.

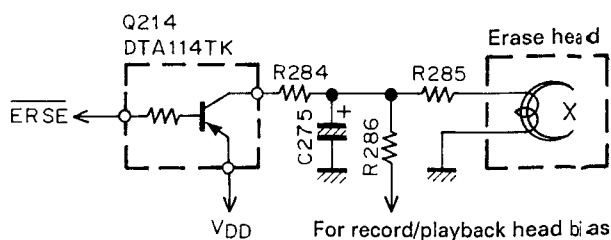


Fig. 17 Erase circuit

CIRCUIT DESCRIPTION

8. Voice Synthesis and Beep

These sounds are used to check the time and keyboard operation, and to indicate errors. They are output from an IC in the main unit.

Voice synthesis sound output circuit

The synthesized voice is used to confirm the clock, voice code stamp, and registration number. The synthesized voice corresponding to the data output from the CPU is output from IC207. The audio signal from IC207 follows through the same route as for greeting message playback, and is output to the line or speaker.

The voice code stamp is recorded on the microcassette through IC203. PB goes high to record only the voice code stamp signal.

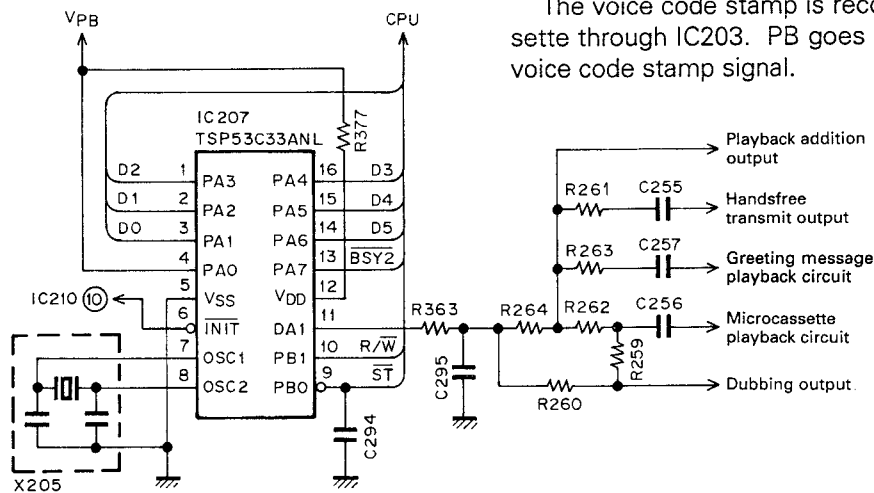


Fig. 18 Voice synthesis sound output circuit

• Beep output circuit

Beeps are produced from 801.3Hz, 1008.1Hz, and 1645Hz square wave signals and a 1633Hz sine wave signal.

The square wave signals are used for the ringer tone, the pseudo-ringer tone, and the beep that sounds when an operation is performed during standby, and are output from CPU BEEP to the speaker through IC214.

The sine wave signal is used for the message recording start/end tone for automatic termination, the error tone for remote controller operation, the tone that indicates no secret code is registered, and the intermittent tone that sounds when the termination message is full or when automatic offhooking occurs at ten terminations. It is output from IC205 to the line through IC202 and T201, like PB transmission.

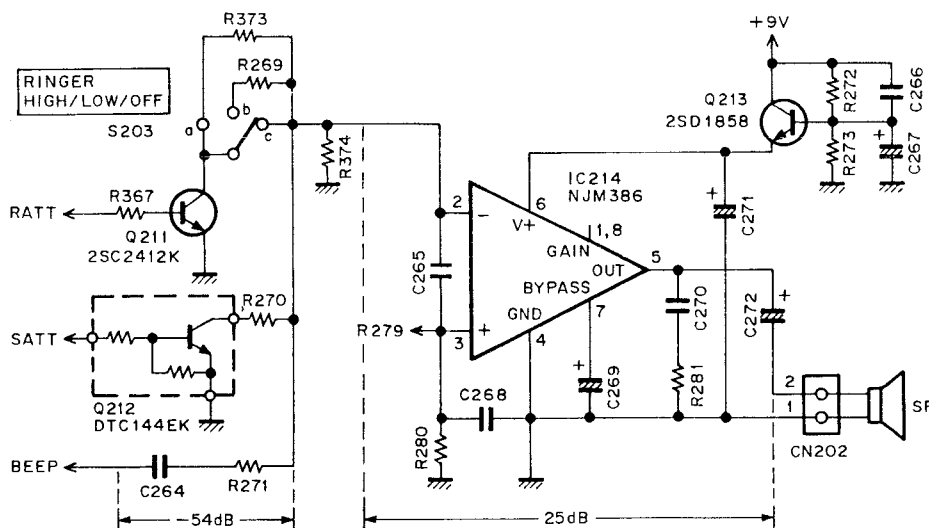


Fig. 19 Beep (square wave) output circuit

CIRCUIT DESCRIPTION

9. Signal Detection

The telephone detects DTMF, ringback tone, busy tone, VOX, and line connection.

• DTMF detection circuit

When the remote controller is used, the DTMF signal from the other telephone via the line passes through IC202 and IC203, enters input amplifier IC206, and is detected by the DTMF detection section of IC206.

The DTMF detection section attenuates the 400Hz frequency of the input signal with a dial tone filter to prevent any detection error due to the dial tone. In addition, undesired band signals are removed by the

high- and low-group band-pass filter. If the amplitude of the output is equal to or greater than the prescribed value, the code corresponding to the output is output to D1 to D4.

Q217, connected to ESt of IC206, prevents recording of any DTMF signal input during recording from the line. If a DTMF signal were recorded on tape or as a response message and were played back with the remote controller, the played-back PB signal would be interpreted as a remote controller command, and a problem, such as failure to disconnect the line, might occur. The time from ESt going high to REC going low is 5.5ms.

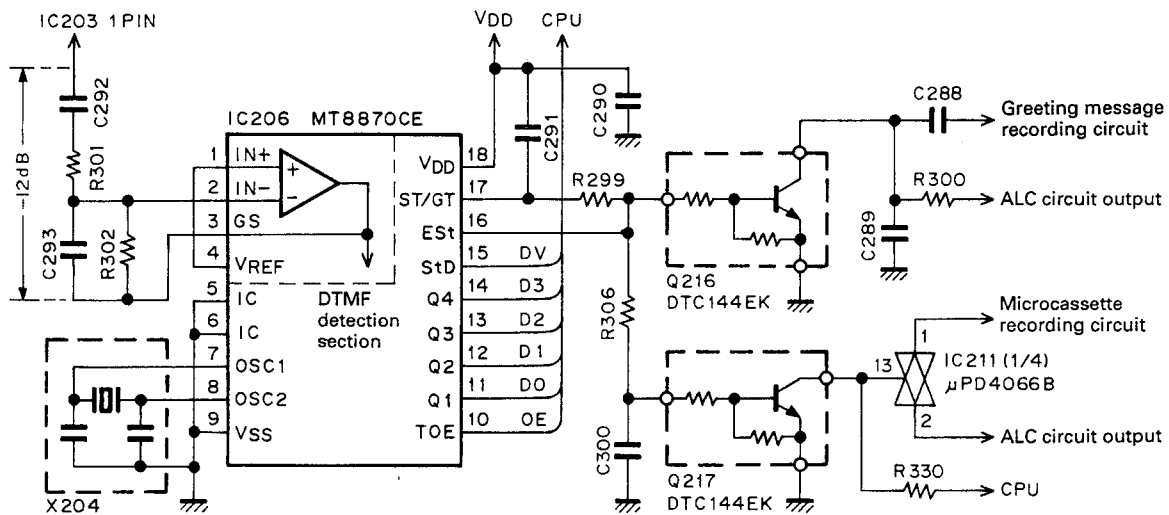


Fig. 20 DTMF detection circuit

• VOX circuit

The VOX circuit detects whether there is a ringback tone, busy tone, or audio signal. The signal enters IC202 from the telephone line, is amplified by IC203 and IC204, and rectified by Q210 and C253. The rectified signal enters the analog input port of the CPU, which detects whether there is a ringback tone, busy

tone, or audio signal. It distinguishes between the ringback tone, busy tone, and audio signal by checking the comparison level and timing for each input.

The detection level for the busy tone and ringback tone is about 0.94V or higher, and the detection level for the audio signal is about 0.72V or higher.

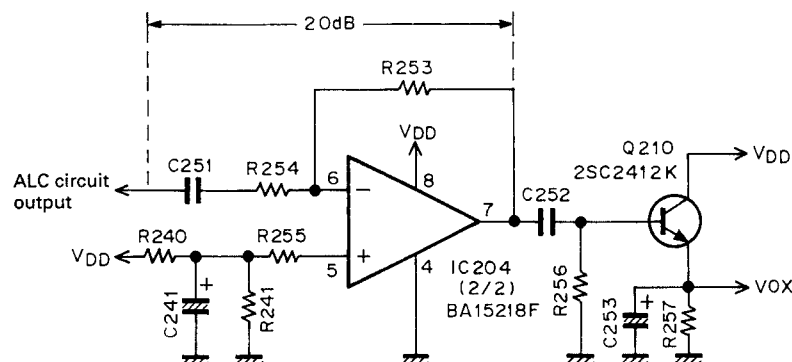


Fig. 21 VOX circuit

CIRCUIT DESCRIPTION

- **Line connection detection circuit**

If the telephone line breaks when the telephone is offhook, the balance between transmission and reception is lost, and the side tone becomes very large. If the telephone line breaks and TLD goes high, MUTE is made low to disconnect the handset microphone and speaker from the line.

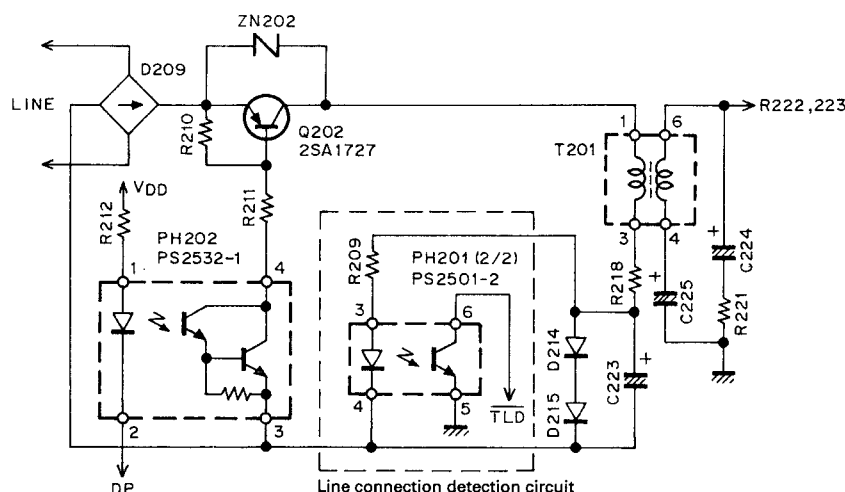


Fig. 22 Line connection detection circuit

10. Microcassette

The microcassette uses a two-track, one-channel mechanism that performs playback, fast forward, rewind, and stop operations with a motor for transporting the tape and switching between modes. The tape speed is kept constant (2.4cm/sec) by the IC governor. Fast forward and rewind operations are performed at high speed by approximately doubling the motor speed.

- **Governor circuit**

The governor circuit turns the motor on and off with the governor IC to control the motor speed. The governor IC compares the internal reference voltage with the back electromotive voltage of the motor. If the back electromotive voltage is less than the reference voltage, the motor is turned on, otherwise, it is turned off. Since the back electromotive voltage is large due to internal resistance when the motor is running, it is corrected by resistors R4 and R5 connected in parallel, as shown in Figure 23.

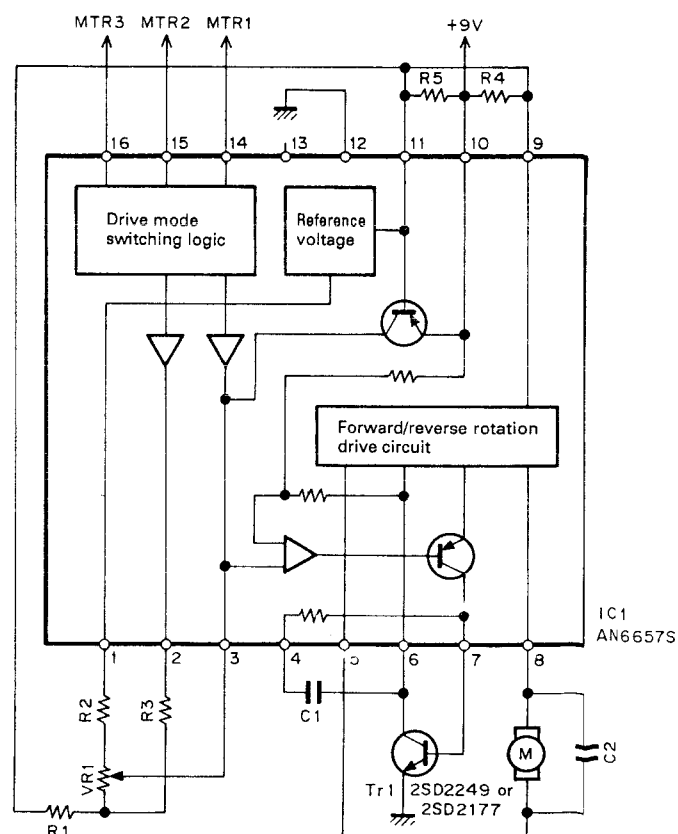


Fig. 23 Governor circuit

CIRCUIT DESCRIPTION

11. Power Supply Circuit

The power supply circuit contains the AC power supply and memory backup power supply.

• AC power supply (+9V, VDD, VCPU)

The power (+9V) from the AC adapter is supplied to the cassette mechanism and IC214, and to VDD and VCPU through IC213. The CPU RAM is backed up by super-capacitor C209 if power fails.

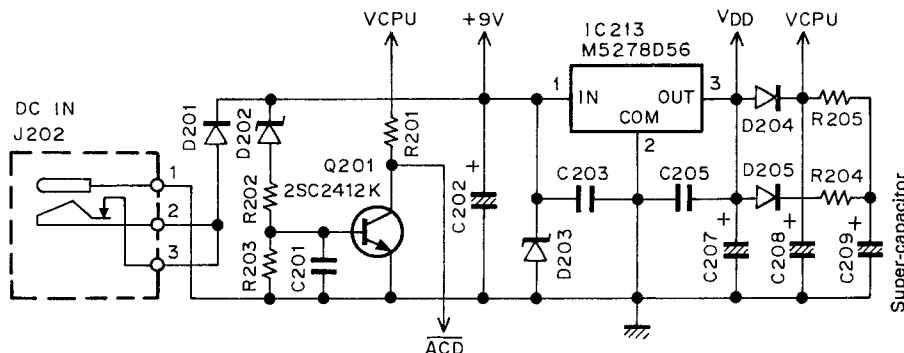


Fig. 24 AC power supply

12. LED Drive Circuit

• Direct drive circuit

Since each CPU port can source a maximum current of 10mA, it directly drives the LEDs other than the key illumination LED and MUTE LED without buffering.

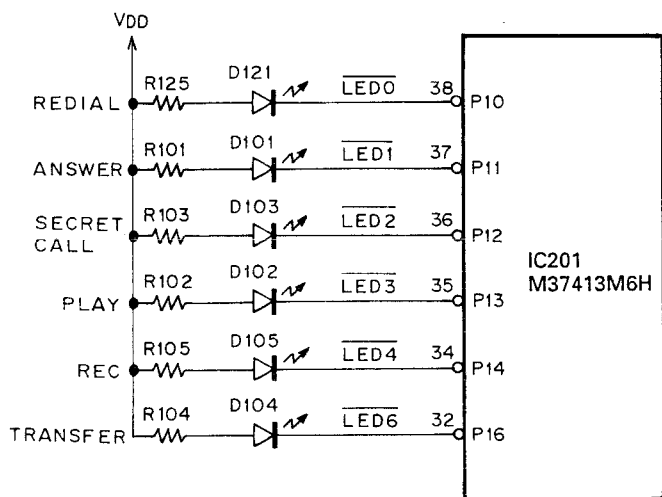


Fig. 25 Direct drive circuit

• Constant current drive circuit

The key illumination LED is driven by the constant current drive circuit. This is because there are many LEDs, and if they are connected in parallel in the constant current drive circuit, a large current is drawn; also, if they are connected in series, the power supply voltage must be increased, and the voltage may fluctuate greatly.

The constant-current drive circuit shown in Figure 26 turns Q105 on when LED5 goes low, and about 1.2V is applied to points A and B by D119 and D120. When the voltage between points B and C is about 0.5V, a constant current of about 7mA flows by emitter resistors R107 to R110 (68Ω), and drives the LEDs.

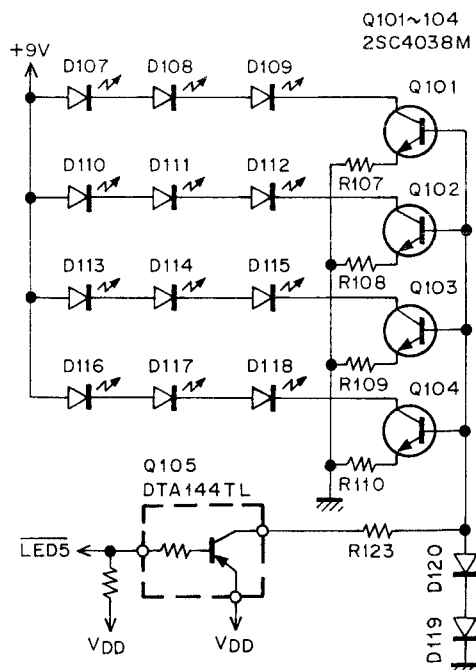
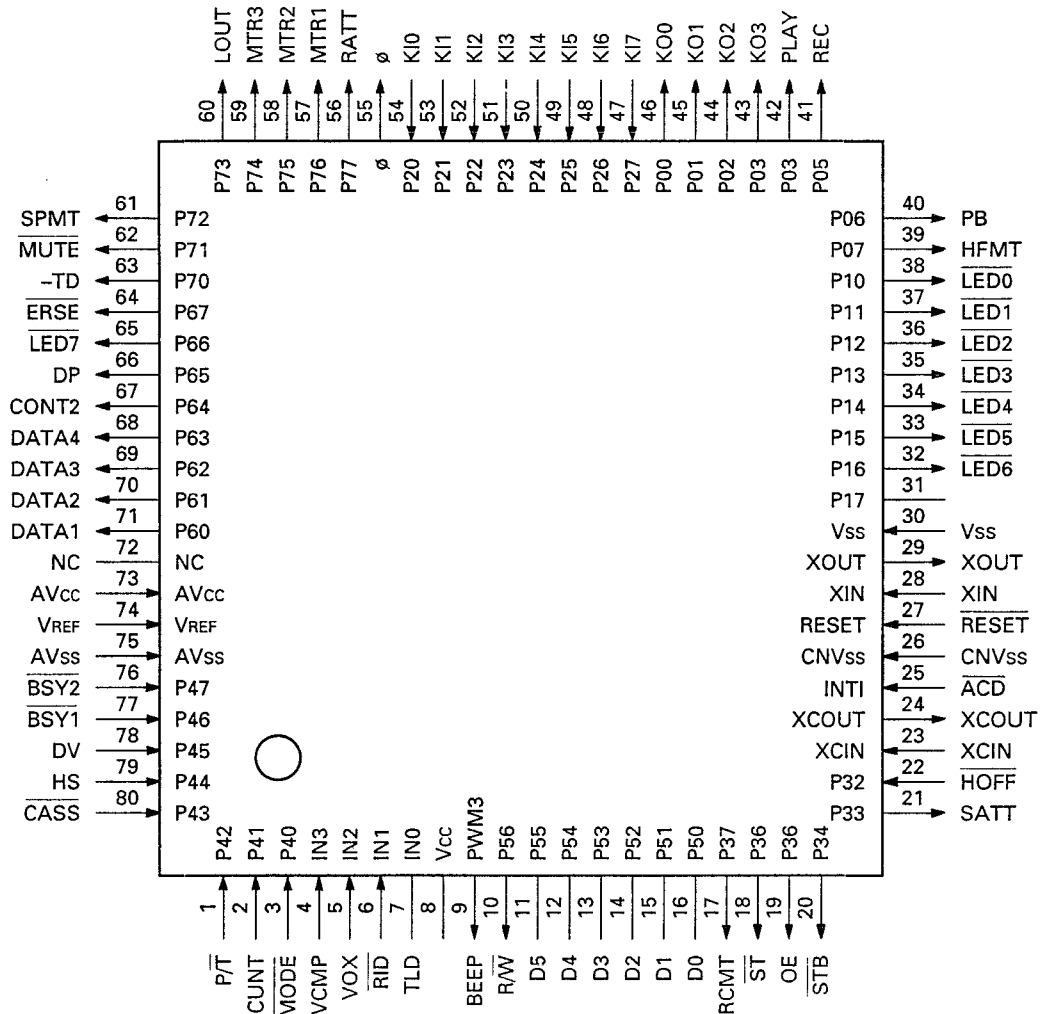


Fig. 26 Constant current drive circuit

SEMICONDUCTOR DATA

Microcomputer : M37413M6H-171 (IC201)

• Terminal connection diagram



• Terminal function

Pin No.	Signal name	I/O	Function
1	P/T	I	Dial mode change signal
2	CUNT	I	Microcassette count signal
3	MODE	I	Microcassette operation confirmation signal
4	VCMP	I	VOX reference voltage signal
5	VOX	I	400Hz voice detection signal
6	RID	I	Incoming signal detection signal
7	TLD	-	Inversion detection
8	-	-	Connect to VCPU
9	BEEP	O	Beep output
10	R/W	O	TSP53C33ANL read/write signal

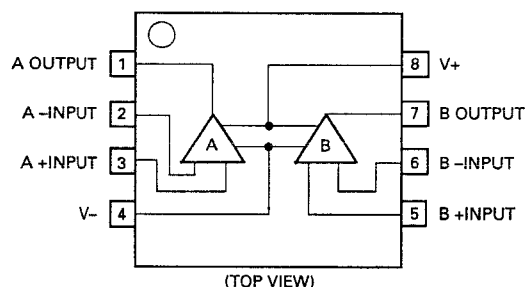
SEMICONDUCTOR DATA

Pin No.	Signal name	I/O	Function
11~16	D5~D0	–	Data bus 5~0
17	RCMT	O	Record mute signal
18	ST	O	TSP53C33ANL strobe output
19	OE	O	MT8870CE output enable
20	STB	O	TMS3477NL strobe output
21	SATT	O	DTMF attenuate signal
22	H $\overline{\text{OFF}}$	I	Branch detection
23	XCIN	I	32.768kHz crystal connection pin
24	XCOUT	O	32.768kHz crystal connection pin
25	$\overline{\text{ACD}}$	I	AC power supply detection signal input
26	CNVss	I	Connect to GND
27	$\overline{\text{RESET}}$	I	Reset signal input
28	XIN	I	1MHz ceralock connection pin
29	XOUT	O	1MHz ceralock connection pin
30	Vss	I	Connect to GND
31	–	–	Connect to GND
32	$\overline{\text{LED6}}$	O	TRANSFER LED control
33	$\overline{\text{LED5}}$	O	TALK LED control
34	$\overline{\text{LED4}}$	O	REC LED control
35	$\overline{\text{LED3}}$	O	PLAY LED control
36	$\overline{\text{LED2}}$	O	SECRET CALL LED control
37	$\overline{\text{LED1}}$	O	ANSWER LED control
38	$\overline{\text{LED0}}$	O	REDIAL LED control
39	H $\overline{\text{FMT}}$	O	Handsfree microphone mute signal
40	PB	O	PB gate change signal
41	REC	O	REC gate change signal
42	PLAY	O	PLAY gate change signal
43~46	KO3~KO0	O	Key scan output 3~0
47	KI7	I	ANSWER button input
48	KI6	I	CLEAR button input
49	KI5	I	SPEED/SET button input
50~54	KI4~KI0	I	Key scan input 4~0
55	ϕ	O	No connect
56	RATT	O	Ringer attenuate signal
57~59	MTR1~MTR3	O	Motor control 1~3
60	LOUT	O	LOUT gate change signal
61	SPMT	O	Speaker mute signal
62	MUTE	O	MUTE gate change signal
63	$\overline{\text{TD}}$	O	TC35219P data strobe signal
64	$\overline{\text{ERSE}}$	O	Cassette erase control
65	$\overline{\text{LED7}}$	O	MUTE LED control
66	DP	O	Dial pulse output
67	CONT2	O	TC35219P control 2
68~71	DATA4~DATA1	O	TC35219P data 4~1
72	NC	–	No connect
73	AVcc	I	Connect to VCPU
74	VREF	I	Connect to VCPU
75	AVss	I	Connect to GND
76	BSY2	I	TSP53C33ANL busy signal
77	BSY1	I	TMS3477NL busy signal
78	DV	I	MT8870CE valid tone pair detection
79	HS	I	Hook switch input
80	CASS	I	Cassette detection signal

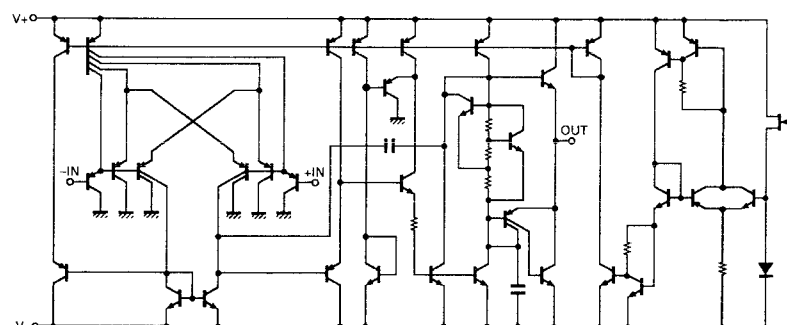
SEMICONDUCTOR DATA

Ope Amp : NJM3414M (IC202)

• Terminal connection diagram

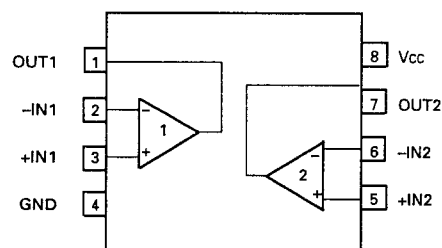


• Equivalent circuit



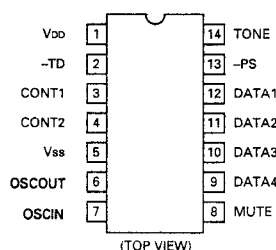
Dual Ope Amp : BA15218F (IC203, 204)

• Terminal connection diagram

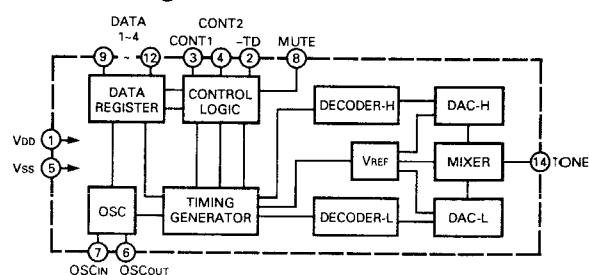


DTMF Generator : TC35219P (IC205)

• Terminal connection diagram



• Block diagram



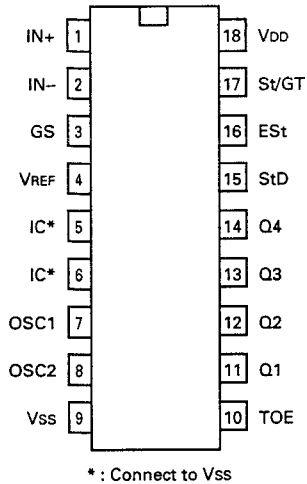
• Terminal function

Pin No.	Port name	Function
1	VDD	Power supply pin.
2	-TD	Output method selection input pin.
3	CONT1	Single tone output selection input pin. Normally, high.
4	CONT2	
5	VSS	Ground pin.
6	OSCOUT	Oscillation circuit input/output pin.
7	OSCIN	
8	MUTE	Mute output pin. "L" in standby mode (when -TD input is low) "H" in operating mode, whether an effective tone is output.
9	DATA4	Data input pin. 4bit data is input.
10	DATA3	
11	DATA2	
12	DATA1	
13	-PS	Oscillation control input pin. "H" The register latches DATA 1 to DATA 4, CONT1, and CONT 2 data on the rising edge of -TD. When -TD is low, oscillation continues. "L" The register does not latch data. When -TD is low, oscillation stops.
14	TONE	Tone output pin. A dual tone or single tone is output according to the input.

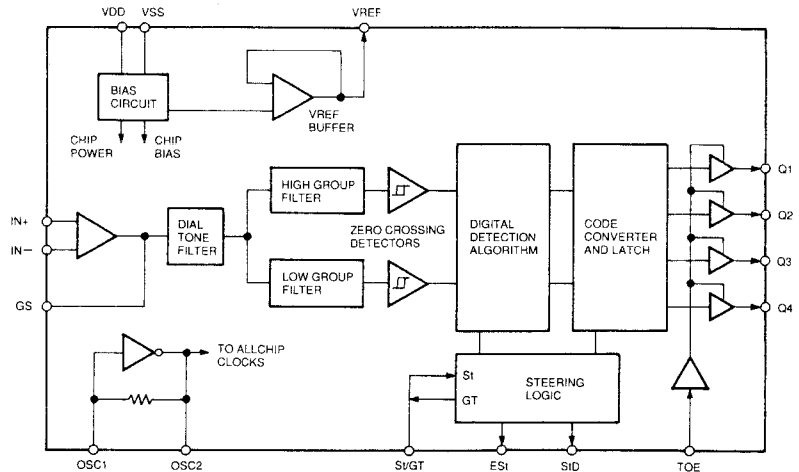
SEMICONDUCTOR DATA

DTMF Receiver : MT8870CE (IC206)

• Terminal connection diagram

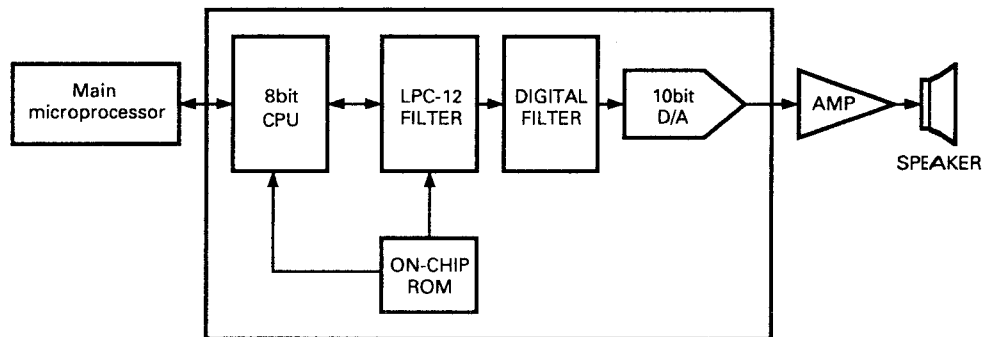
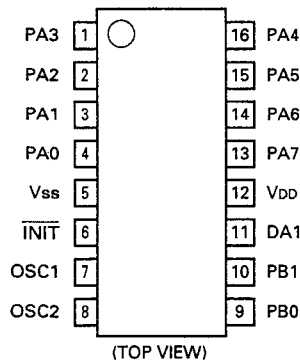


• Block diagram



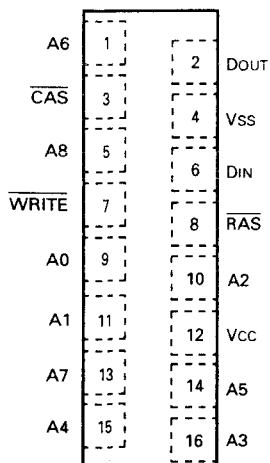
Voice Synthesis : TSP53C33ANL (IC207)

• Terminal connection diagram • Block diagram



256K D-RAM : TMM41256AZ-15 (IC208, 209)

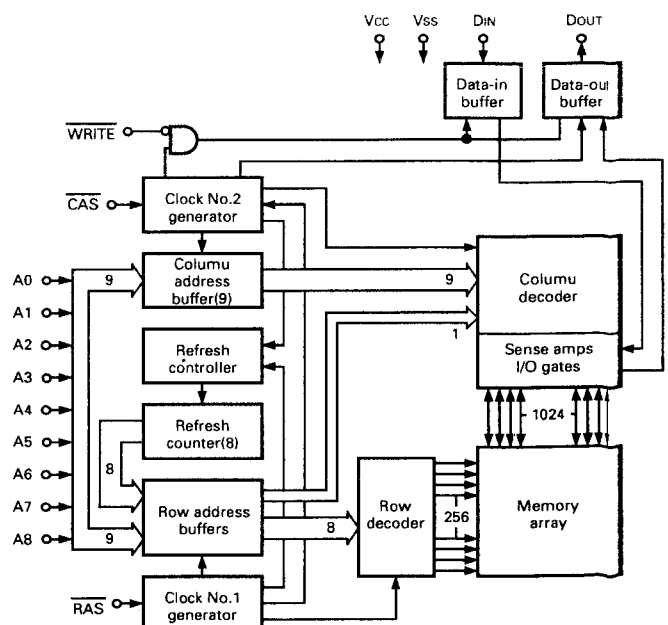
• Terminal connection diagram



• Terminal description

Name	Description
A0~A8	Address input
CAS	Column address strobe
DIN	Data input
DOUT	Data output
RAS	Row address strobe
WRITE	Read/write input
Vcc	Power supply (+5V)
Vss	GND

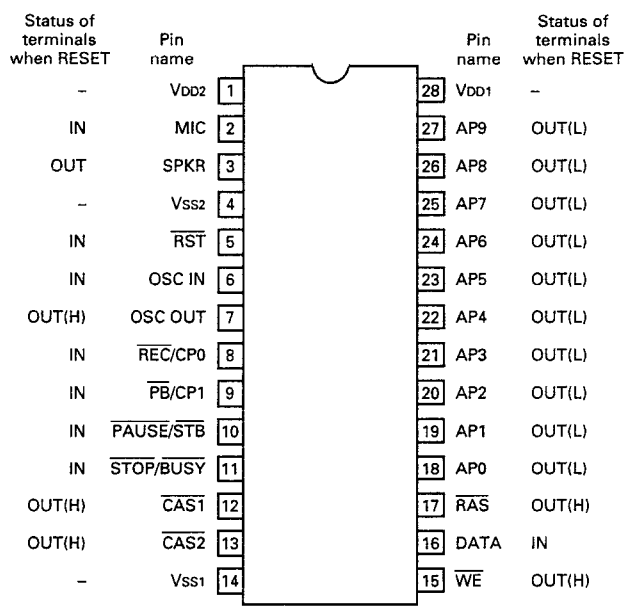
• Block diagram



SEMICONDUCTOR DATA

Voice Recording/Playback IC : TMS3477NL (IC210)

• Terminal connection diagram



(TOP VIEW)

• Terminal function

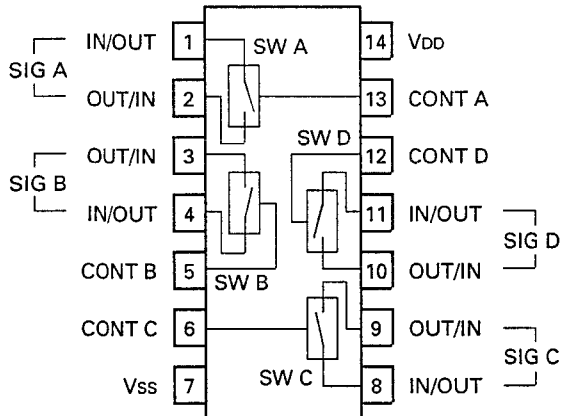
Pin No.	Port name	I/O	Function
1	VDD2	I	Analog system +5V (standard) power input pin.
2	MIC	I	Analog signal input pin (comparator input pin).
3	SPKR	O	Analog signal output pin (D/A converter output pin).
4	VSS2	I	Analog system ground (0V) pin.
5	RST	I	Reset input pin.
6	OSCIN	I	Oscillator input pin (external clock input pin).
7	OSCOU	O	Oscillator output pin.
8	REC/CP0	I	REC (key input interface) : REC command input pin. CP0 (CPU interface) : Command input port 0.
9	PB/CP1	I	PB (key input interface) : PB command input pin. CP1 (CPU interface) : Command input port 1.
10	PAUSE/STB	I	PAUSE (key input interface) : PAUSE command input pin. STB (CPU input interface) : Command strobe input port.
11	STOP/BUSY	I/O	STOP (key input interface) : STOP command input pin. BUSY (CPU interface) : BUSY signal output pin.
12	CAS1	O	Column address strobe signal output pin (chip select 1).
13	CAS2	O	Column address strobe signal output pin (chip select 2).
14	VSS1	I	Digital system ground (0V) pin.
15	WE	O	Data write enable signal output pin.
16	DATA	I/O	Data input/output pin.
17	RAS	O	Row address strobe signal output pin.
18~27	AP0~AP9	I/O	Input : Operation mode program input pin. Output : Column/row address output pin (AP9 : MSB, AP0 : LSB).
28	VDD1	I	Digital system +5V (standard) power input pin.

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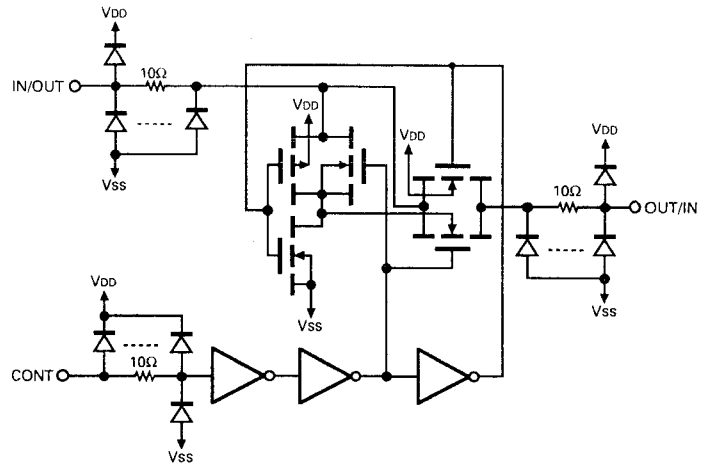
SEMICONDUCTOR DATA

Analog Gate : μ PD4066B (IC211, 212)

• Terminal connection diagram

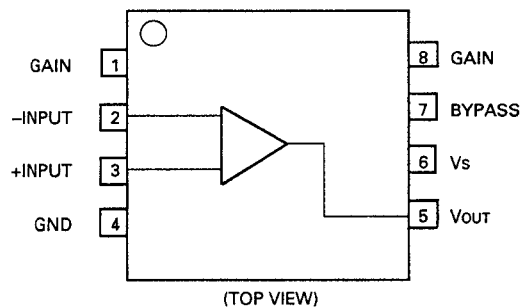


• Equivalent circuit



Power Amp : NJM386 (IC214)

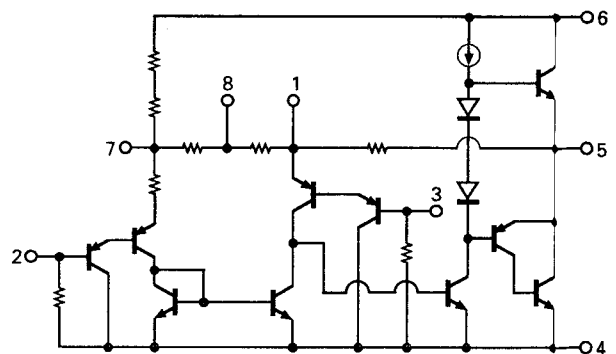
• Terminal connection diagram



• Maximum ratings (Ta = 25°C)

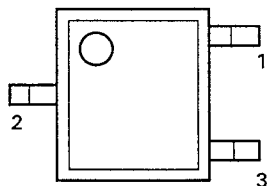
Item	Symbol	Rating	Unit
Power voltage	Vs	15	V
Power consumption	PT	700	mW
Power input	VIN	±0.4	V
Operating case temperature	Topr	-20 ~ +75	°C
Storage temperature	Tstg	-40 ~ +125	°C

• Equivalent circuit



Reset IC : PST572LMT (IC215)

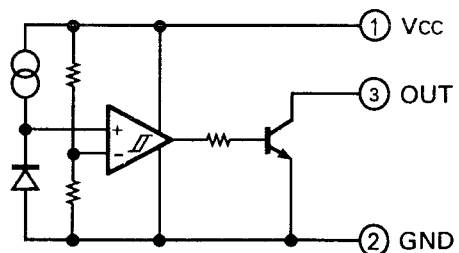
• Terminal connection diagram



• Maximum ratings (Ta = 25°C)

Item	Symbol	Rating	Unit
Storage temperature	Tstg	-40 ~ +125	°C
Operating case temperature	Topr	-20 ~ +75	°C
Power voltage	VCCMAX	-0.3 ~ 10	V
Loss	Pd	200	mW

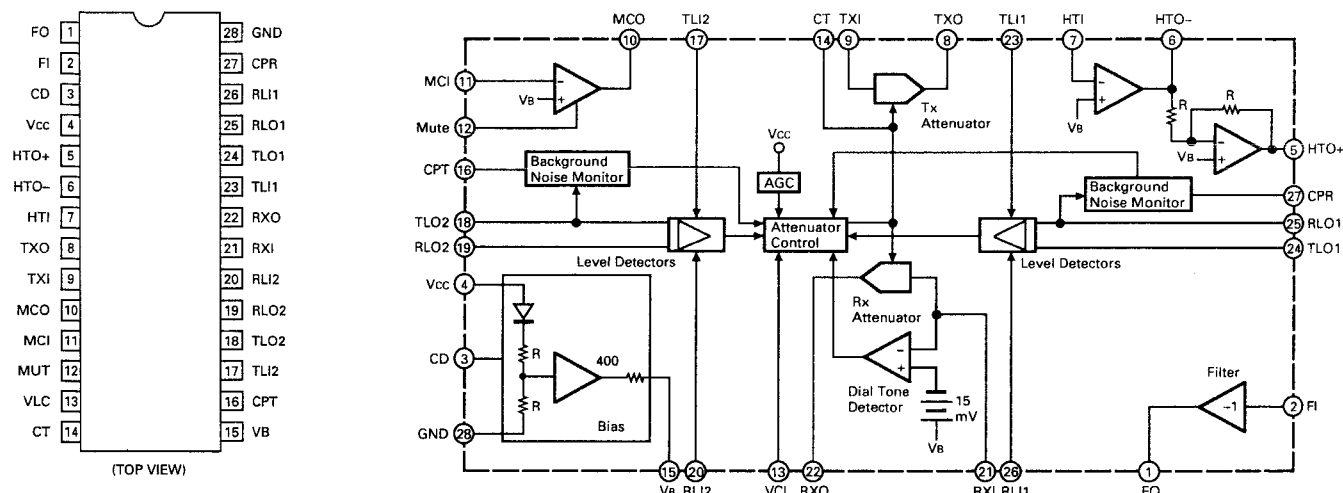
• Block diagram



SEMICONDUCTOR DATA

Hands Free : MC34118DW (IC401)

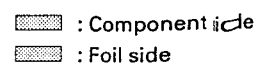
- Terminal connection diagram • Block diagram



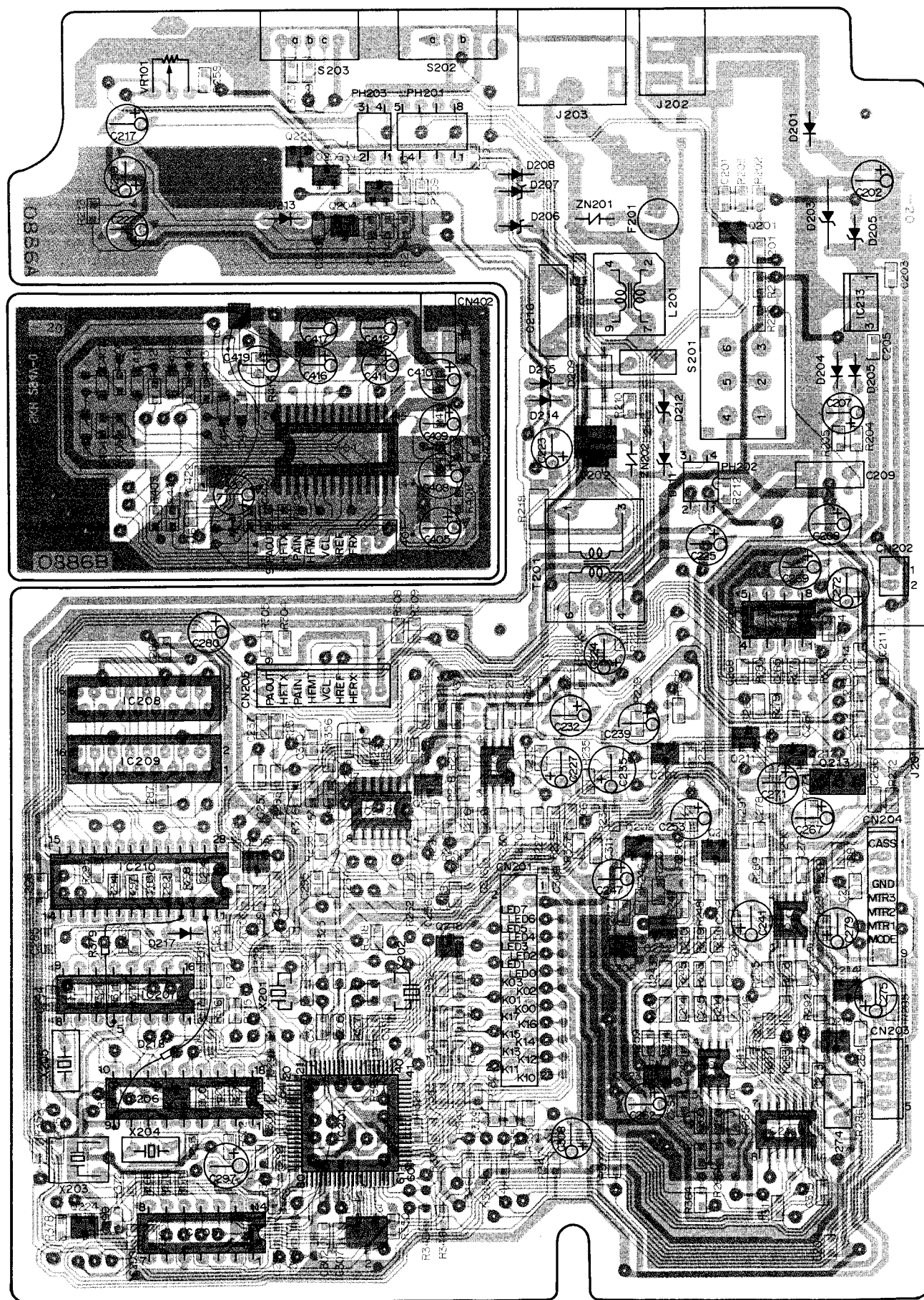
• Terminal description

Pin	Name	Description
1	FO	Filter output. Output impedance is less than 50Ω.
2	FI	Filter input. Input impedance is greater than 1.0MΩ.
3	CD	Chip Disable. A logic low (<0.8V) sets normal operation. A logic high (>2.0V) disables the IC to conserve power. Input impedance is nominally 90kΩ.
4	Vcc	A supply voltage of +2.8 to +6.5V is required, at ≈5.0mA. As Vcc falls from 3.5 to 2.8V, an AGC circuit reduces the receive attenuator gain by ≈25dB (when in the receive mode).
5	HTO+	Output of the second hybrid amplifier. The gain is internally set at -1.0 to provide a differential output, in conjunction with HTO-, to the hybrid transformer.
6	HTO-	Output of the first hybrid amplifier. The gain of the amp is set by external resistors.
7	HTI	Input and summing node for the first hybrid amplifier. DC level is ≈V _B .
8	TXO	Output of the transmit attenuator. DC level is approximately V _B .
9	TXI	Input to the transmit attenuator. Max. signal level is 350mVrms. Input impedance is ≈10kΩ.
10	MCO	Output of the microphone amplifier. The gain of the amplifier is set by external resistors.
11	MCI	Input and summing node of the microphone amplifier. DC level is ≈V _B .
12	MUT	Mute input. A logic low (<0.8V) sets normal operation. A logic high (>2.0V) mutes the microphone amplifier without affecting the rest of the circuit. Input impedance is nominally 90kΩ.
13	VLC	Volume control input. When VLC = V _B , the receive attenuator is at maximum gain when in the receive mode. When VLC = 0.3V _B , the receive gain is down 35dB. Does not affect the transmit mode.
14	CT	An RC at this pin sets the response time for the circuit to switch modes.
15	V _B	An output voltage ≈Vcc/2. This voltage is a system ac ground, and biases the volume control. A filter cap is required.
16	CPT	An RC at this pin sets the time constant for the transmit background monitor.
17	TLI2	Input to the transmit level detector on the mike/speaker side.
18	TLO2	Output of the transmit level detector on the mike/speaker side, and input to the transmit background monitor.
19	RLO2	Output of the receive level detector on the mike/speaker side.
20	RLI2	Input to the receive level detector on the mike/speaker side.
21	RXI	Input to the receive attenuator and dial tone detector. Max input level is 350mVrms. Input impedance is ≈10kΩ.
22	RXO	Output of the receive attenuator. DC level is approximately V _B .
23	TLI1	Input to the transmit level detector on the line side.
24	TLO1	Output of the transmit level detector on the line side.
25	RLO1	Output of the receive level detector on the line side, and input to the receive background monitor.
26	RLI1	Input to the receive level detector on the line side.
27	CPR	An RC at this pin sets the time constant for the receive background monitor.
28	GND	Ground pin for the entire IC.

MAIN PCB ASSY (W02-1721-08) Component side view

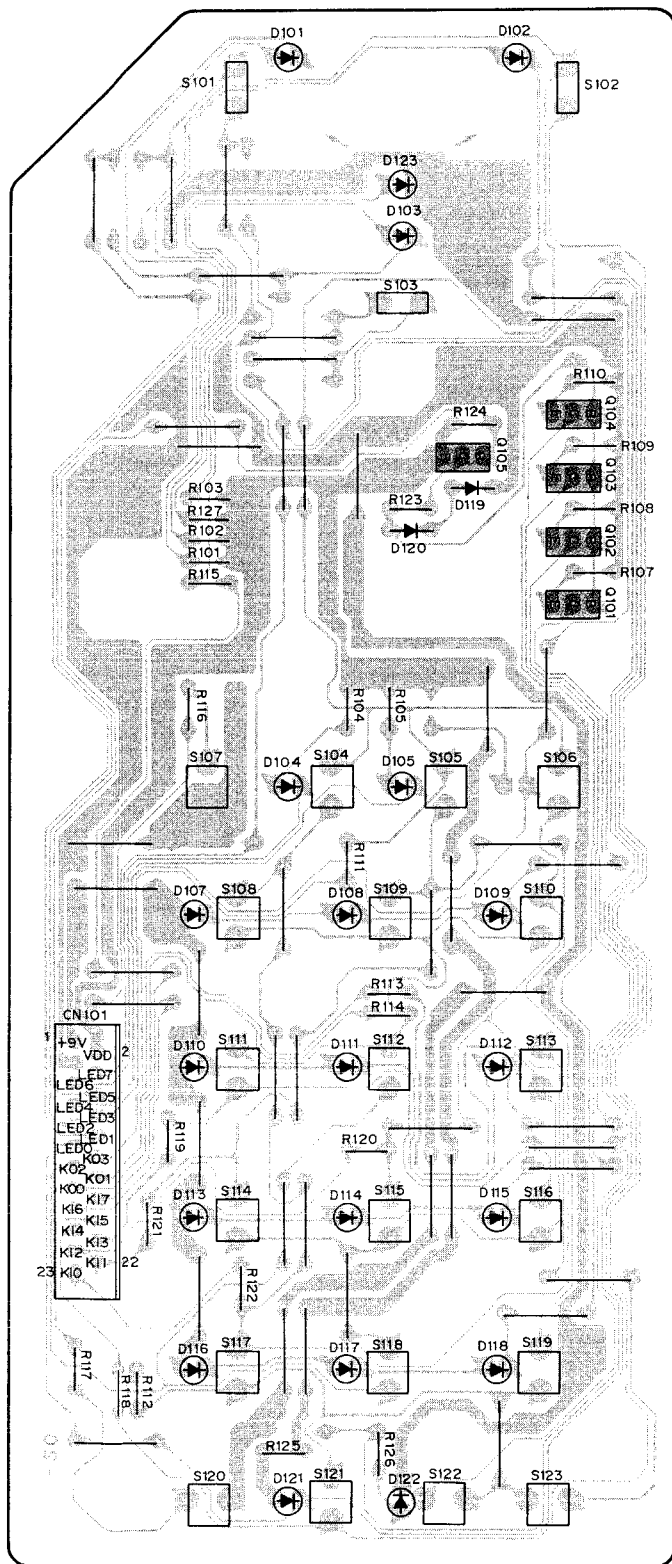


MAIN PCB ASSY (W02-1721-08) Foil side view

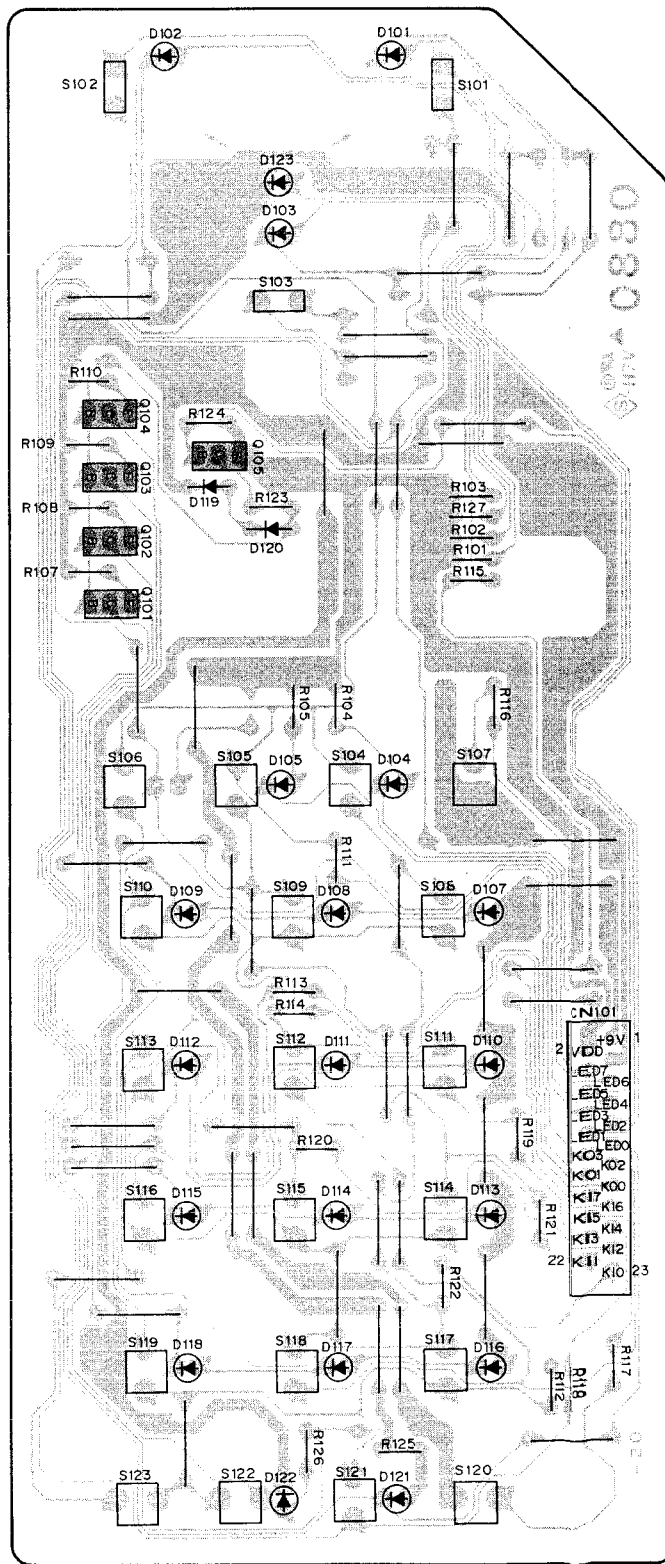


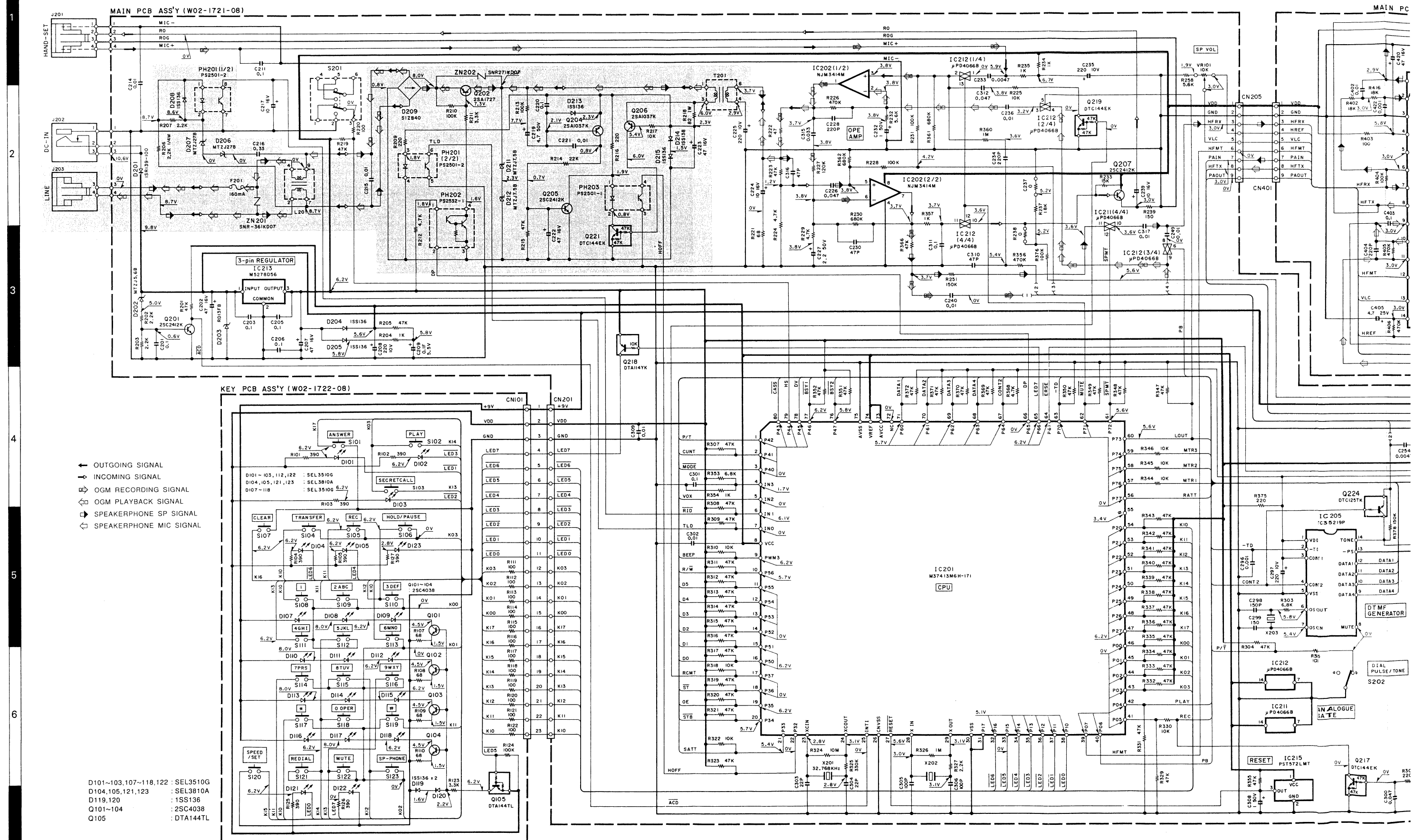
IS-M40 PC BOARD VIEWS

KEY PCB ASSY (W02-1722-08)
Component side view

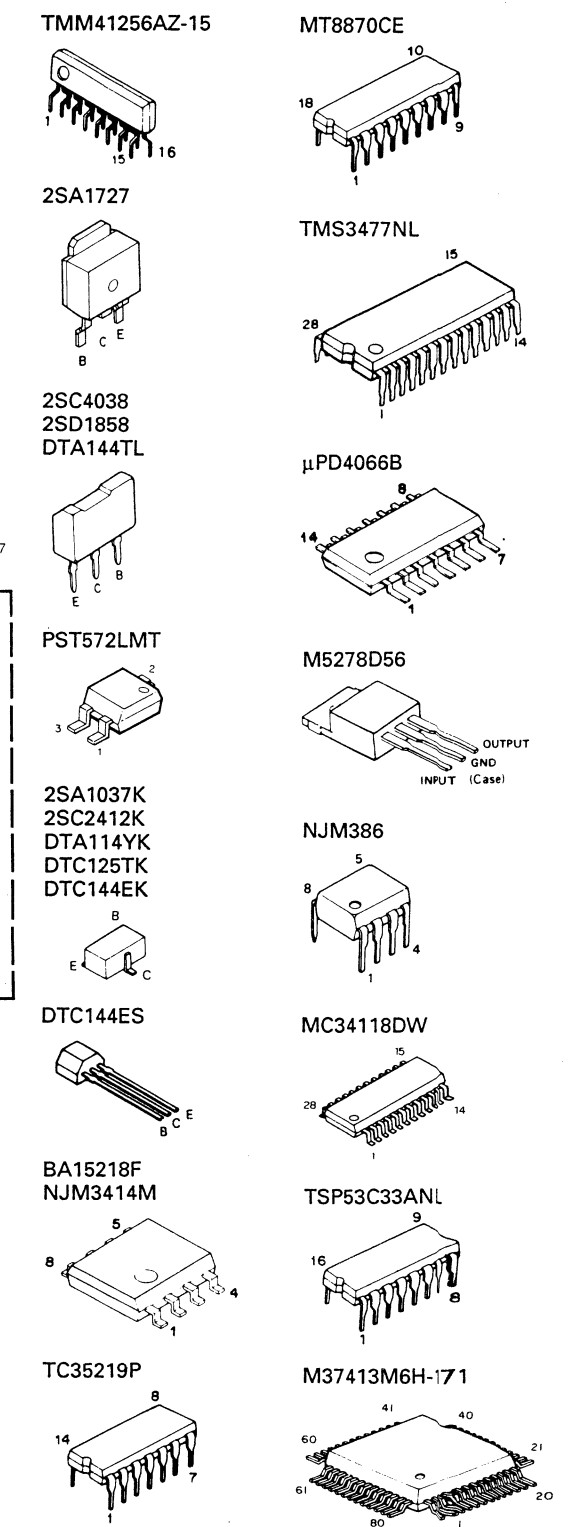
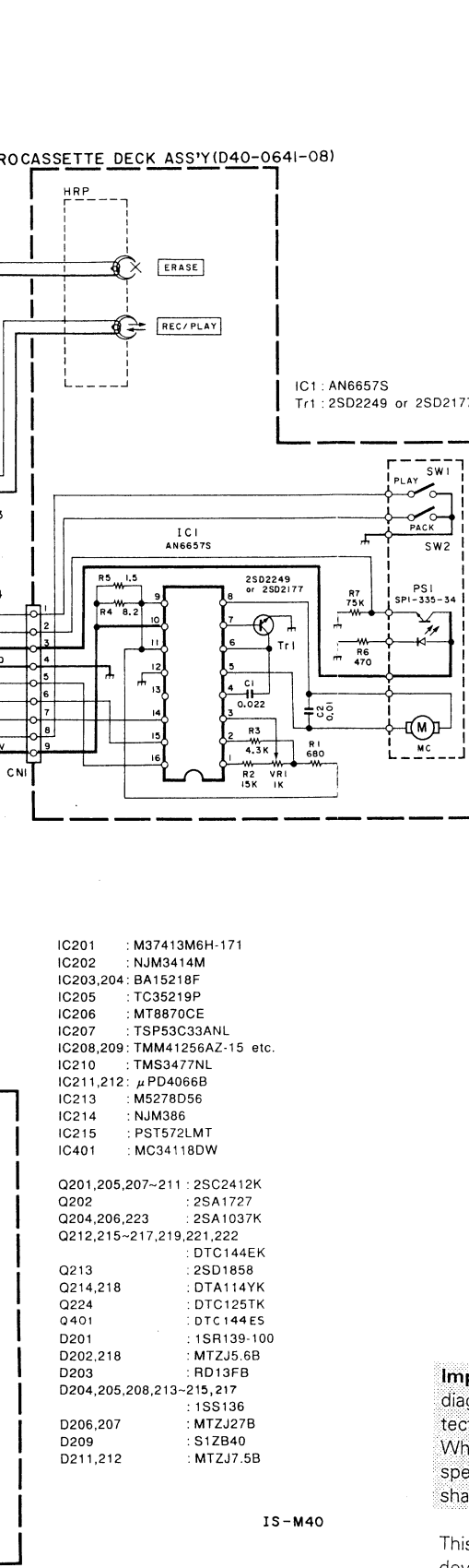
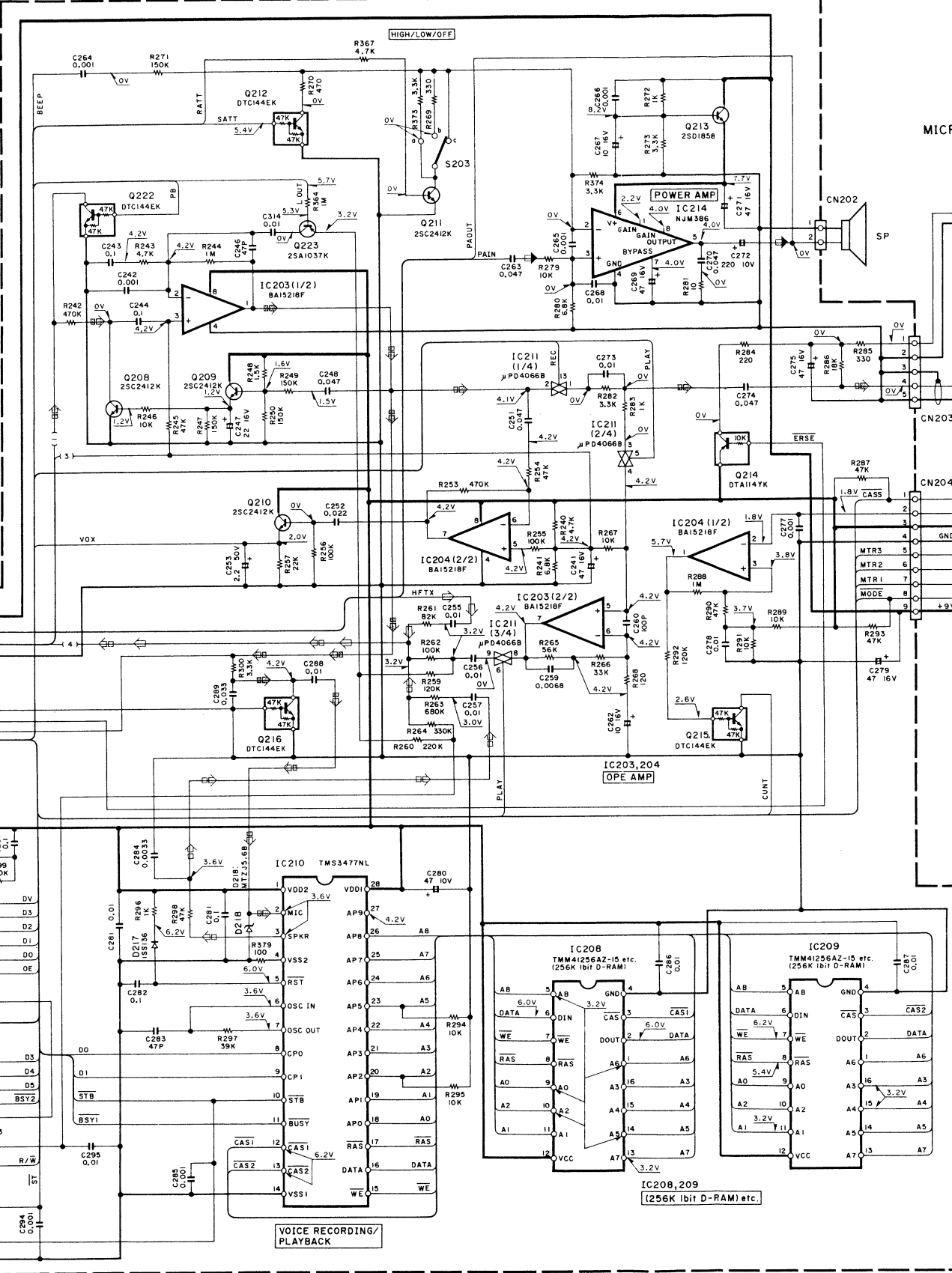
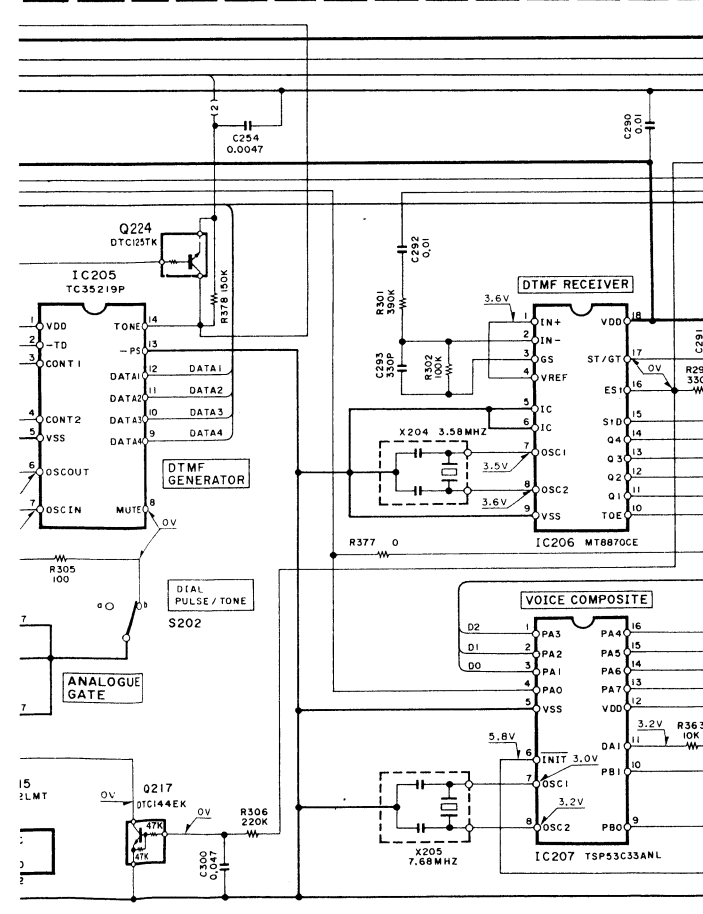
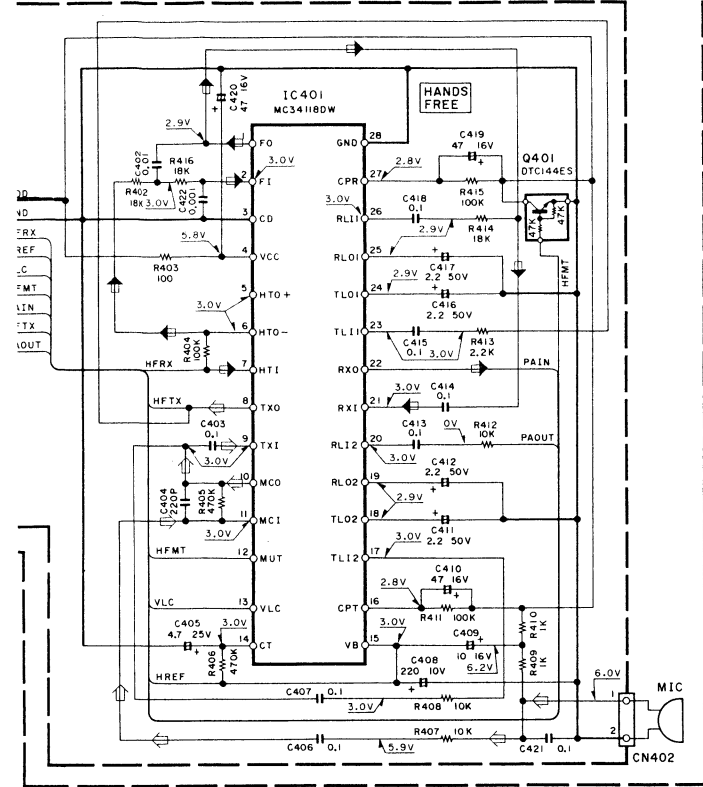


KEY PCB ASSY (W02-1722-08)
Foil side view





MAIN PCB ASS'Y(W02-1721-08):HANDS-FREE PCB



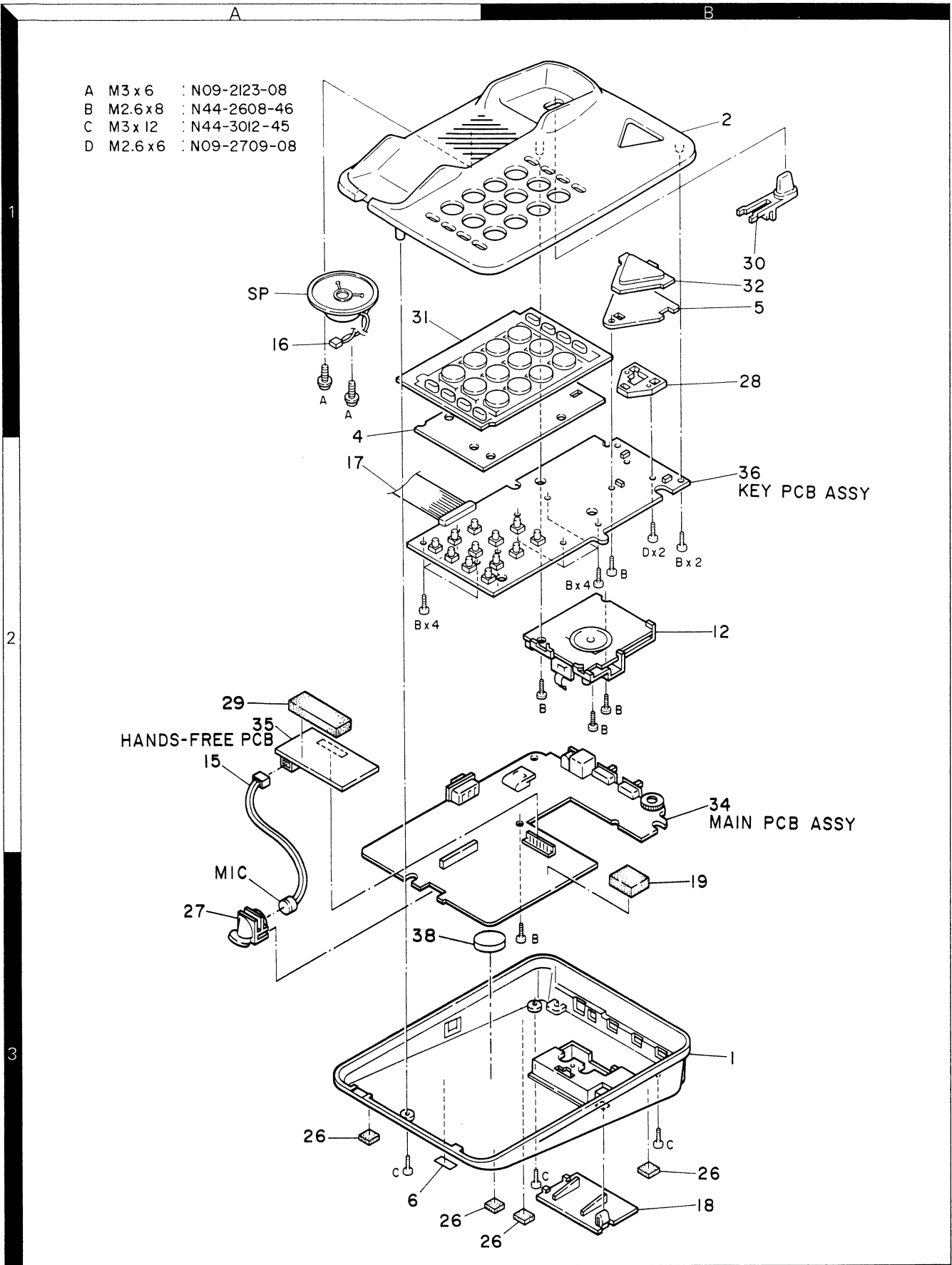
Important Safety Notice : The area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazards. When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

This schematic diagram may be modified at any time with development of new technology.

IS-M40

IS-M40 IS-M40

EXPLODED VIEW



PARTS LIST

× New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnés dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

IS-M40
MAIN PCB ASSY (W02-1721-08)

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
IS-M40						
1	3B	*	A02-1645-08	CASE (BOTTOM)		
2	1B	*	A02-1646-08	CASE (TOP)		
3	-	*	A70-0609-08	HANDSET ASSY		
4	2A	*	B11-1053-08	KEY SHEET(10 KEYS)		
5	1B	*	B11-1054-08	KEY SHEET(TRIANGLE KEY)		
6	3A	*	B42-3388-08	S/No LABEL		
7	-	*	B46-0436-08	WARRANTY CARD		
8	-	*	B46-0437-08	REGISTRATION CARD		
9	-	*	B59-0445-08	QUICK REFERENCE CARD(L)		
10	-	*	B59-0447-18	QUICK REFERENCE CARD(S)		
11	-	*	B62-0242-08	INSTRUCTION MANUAL		
12	2B	*	D40-0641-08	MICROCASSETTE DECK ASSY		
13	-	*	E30-3113-08	CURL CORD ASSY		
14	-	*	E30-3114-08	PHONE CORD ASSY		
15	2A	*	E37-0026-08	CONNECTING WIRE(HANDS-FREE MIC)		
16	1A	*	E37-0026-08	CONNECTING WIRE(SP)		
17	2A	*	E37-0211-08	FLAT CABLE(23pin)		
18	3B	*	F07-1338-08	COVER (CASSETTE)		
19	3B	*	G13-1357-08	CUSHION(MAIN PCB)		
29	2A	*	G13-1365-08	CUSHION(HANDS-FREE PCB)		
20	-	*	H10-2734-08	POLYSTYRENE FOAMED FIXTURE		
21	-	*	H13-0857-08	PROTECTION PLATE(UPPER)		
22	-	*	H13-0859-08	PROTECTION PLATE(LOWER)		
23	-	*	H25-0350-08	PROTECTION BAG(20X30)		
24	-	*	H25-0766-08	PROTECTION BAG		
25	-	*	H52-0262-08	CARTON BOX		
-	-	*	H62-0232-08	MASTER CARTON		
38	3A	*	J02-0393-08	CUSHION(RUBBER:BOTTOM CASE)		
26	3A, 3B	*	J02-0459-08	RUBBER FOOT		
27	3A	*	J19-1517-08	HOLDER(HANDS-FREE MIC)		
28	1B	*	J19-3081-08	HOLDER(TRIANGLE KEY)		
-	-	*	J61-0307-05	MOLD BINDER(MECHA CABLE)		
30	1B	*	K29-4530-13	KNOB (HOOK SW)		
31	1A	*	K29-4667-03	KNOB (10 KEYS SET)		
32	1B	*	K29-4721-08	KNOB (TRIANGLE KEY)		
A	1A	*	N09-2123-08	SCREW (M3X6:SP)		
B	2A, 2B	*	N44-2608-46	SCREW (M2.6X8)		
C	3A, 3B	*	N44-3012-45	SCREW (M3X12)		
D	2B	*	N09-2709-08	SCREW (M2.6X6)		
SP	1A	*	T07-0270-08	SPEAKER		
MIC	3A	*	T91-0520-08	MICROPHONE(HANDS-FREE)		
33	-	*	W01-0194-18	MICROCASSETTE(MC-60)		
34	2B	*	W02-1721-08	MAIN PCB ASSY		
35	2A	*	W02-1721-08	MAIN PCB ASSY(HANDS-FREE PCB)		
36	2B	*	W02-1722-08	KEY PCB ASSY		
37	-	*	W08-0426-08	AC ADAPTER(DCK-250)		
MAIN PCB ASSY (W02-1721-08)						
C201			CK73FF1E104Z	CHIP C	0.1UF	Z
C202			CE04EW1C470M	ELECTRO	47UF	16WV

L:Scandinavia K:USA P:Canada
Y:PX(Far East, Hawaii) T:England E:Europe
Y:AAFES(Europe) X:Australia M:Other Areas

⚠ indicates safety critical components.

PARTS LIST

PARTS LIST

× New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnés dans le Parts No. ne sont pas fournis.

Teile ohne Parts No. werden nicht geliefert.

MAIN PCB ASSY (W02-1721-08)

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
C203 C205, 206 C207 C208 C209			CK73FF1E104Z CK73FF1E104Z CE04EW1C470M CE04EW1A221M C90-2173-08	CHIP C 0.1UF Z CHIP C 0.1UF Z ELECTRØ 47UF 16WV ELECTRØ 220UF 10WV ELECTRØ 0.1F 5.5WV		
C211 C214 C215 C216 C217		*	CK73EB1H104M CK73FB1E103K C91-1114-08 CF93AN2E334K CE04EW1C100M	CHIP C 0.10UF M CHIP C 0.01UF K FILM C 0.01UF 250WV MF 0.33UF K ELECTRØ 10UF 16WV		
C219 C220 C221 C222, 223 C224			CE04EW1H4R7M CK73EB1H104M CK73FB1E103K CE04EW1C470M CE04EW1C100M	ELECTRØ 4.7UF 50WV CHIP C 0.10UF M CHIP C 0.01UF K ELECTRØ 47UF 16WV ELECTRØ 10UF 16WV		
C225 C226 C227 C228 C230			CE04EW1A221M CK73FB1E473K CE04EW1H2R2M CK73FB1E221K CC73FCH1H470J	ELECTRØ 220UF 10WV CHIP C 0.047UF K ELECTRØ 2.2UF 50WV CHIP C 220PF K CHIP C 47PF J		
C232 C233 C234 C235 C236			CE04EW1H1R0M CK73FB1E472K CK73FB1E221K CE04EW1A221M CK73FB1E103K	ELECTRØ 1.0UF 50WV CHIP C 4700PF K CHIP C 220PF K ELECTRØ 220UF 10WV CHIP C 0.01UF K		
C237 C239 C240 C241 C242			R92-0679-05 CE04EW1C100M CK73FB1E103K CE04EW1C470M CK73FB1E102K	CHIP R 0 ØHM ELECTRØ 10UF 16WV CHIP C 0.01UF K ELECTRØ 47UF 16WV CHIP C 1000PF K		
C243 C244 C246 C247 C248			CK73EB1H104M CK73FF1E104Z CC73FCH1H470J CE04EW1C220M CK73FB1E473K	CHIP C 0.10UF M CHIP C 0.1UF Z CHIP C 47PF J ELECTRØ 22UF 16WV CHIP C 0.047UF K		
C249 C251 C252 C253 C254			CK73FB1E103K CK73FB1E473K CK73FB1E223K CE04EW1H2R2M CK73FB1E472K	CHIP C 0.01UF K CHIP C 0.047UF K CHIP C 0.022UF K ELECTRØ 2.2UF 50WV CHIP C 4700PF K		
C255-257 C259 C260 C262 C263			CK73FB1E103K CK73FB1H682K CC73FCH1H101J CE04EW1C100M CK73FB1E473K	CHIP C 0.01UF K CHIP C 6800PF K CHIP C 100PF J ELECTRØ 10UF 16WV CHIP C 0.047UF K		
C264 C265, 266 C267 C268 C269			CK73FB1E102K CK73FB1E102K CE04EW1C100M CK73FB1E103K CE04EW1C470M	CHIP C 1000PF K CHIP C 1000PF K ELECTRØ 10UF 16WV CHIP C 0.01UF K ELECTRØ 47UF 16WV		
C270 C271 C272 C273 C274			CK73FB1E473K CE04EW1C470M CE04EW1A221M CK73FB1E103K CQ93FM1H473J	CHIP C 0.047UF K ELECTRØ 47UF 16WV ELECTRØ 220UF 10WV CHIP C 0.01UF K MYLAR 0.047UF J		

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MAIN PCB ASSY (W02-1721-08)

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
C275 C277 C278 C279 C280			CE04EW1C470M CK73FB1E102K CK73FB1E103K CE04EW1C470M CE04CW1C470M	ELECTRØ 47UF 16WV CHIP C 1000PF K CHIP C 0.01UF K ELECTRØ 47UF 16WV ELECTRØ 47UF 16WV		
C281 C282 C283 C284 C285			CK73FF1E104Z CK73EB1H104M CC73FCH1H470J CK73FB1E332K CK73FB1E102K	CHIP C 0.1UF Z CHIP C 0.10UF M CHIP C 47PF J CHIP C 3300PF K CHIP C 1000PF K		
C286-288 C289 C290 C291 C292			CK73FB1E103K CK73FB1E333K CK73FB1E103K CK73EB1H104M CK73FB1E103K	CHIP C 0.01UF K CHIP C 0.033UF K CHIP C 0.01UF K CHIP C 0.10UF M CHIP C 0.01UF K		
C293 C294 C295 C296 C297			CK73FB1E331K CK73FB1E102K CK73FB1E103K CK73FB1E102K CE04CW1A221M	CHIP C 330PF K CHIP C 1000PF K CHIP C 0.01UF K CHIP C 1000PF K ELECTRØ 220UF 10WV		
C298, 299 C300 C301 C302 C303, 304			CC73FCH1H151J CK73FB1E473K CK73FF1H104Z CK73FB1E103K CC73FCH1H220J	CHIP C 150PF J CHIP C 0.047UF K CHIP C 0.10UF Z CHIP C 0.01UF K CHIP C 22PF J		
C305, 306 C308 C309 C310 C311			CC73FCH1H101J CE04EW1H1R0M CK73FB1E103K CC73FCH1H470J CK73EB1H104M	CHIP C 100PF J ELECTRØ 1.0UF 50WV CHIP C 0.01UF K CHIP C 47PF J CHIP C 0.10UF M		
C312 C314 C315 C316 C317			CK73FB1E473K CK73FB1E103K CK73FB1E333K CC73FCH1H470J CK73FB1E103K	CHIP C 0.047UF K CHIP C 0.01UF K CHIP C 0.033UF K CHIP C 47PF J CHIP C 0.01UF K		
C402 C403 C404 C405 C406, 407			CK73FB1E103K CK73EB1H104M CK73FB1E221K CE04CW1E4R7M CK73EB1H104M	CHIP C 0.01UF K CHIP C 0.10UF M CHIP C 220PF K ELECTRØ 4.7UF 25WV CHIP C 0.10UF M		
C408 C409 C410 C411, 412 C413-415			CE04CW1A221M CE04CW1C100M CE04CW1C470M CE04CW1H2R2M CK73EB1H104M	ELECTRØ 220UF 10WV ELECTRØ 10UF 16WV ELECTRØ 47UF 16WV ELECTRØ 2.2UF 50WV CHIP C 0.10UF M		
C416, 417 C418 C419, 420 C421 C422			CE04CW1H2R2M CK73EB1H104M CE04CW1C470M CK73EB1H104M CK73FB1E102K	ELECTRØ 2.2UF 50WV CHIP C 0.10UF M ELECTRØ 47UF 16WV CHIP C 0.10UF M CHIP C 1000PF K		
CN201 CN202 CN203 CN204 CN205		*	E40-5527-05 E31-7269-08 E40-4011-08 E33-1926-08 E40-5547-08	FLAT CABLE CONNECTØR(23pin) PIN CONNECTØR(2pin:to SP) PIN CONNECTØR(5pin:MECHA HEAD) CONNECTING WIRE(9pin:to MECHA) PIN CONNECTØR(9pin:to PCB)		

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△ CN401 CN402 J201 J202 J203		*	E40-5548-08 E40-4017-08 E58-0405-08 E03-0167-05 E08-0277-08	PIN CONNECTOR(9pin:MAIN PCB) CONNECTING WIRE(2pin:MIC) PHONE JACK(HANDSET) DC JACK PHONE JACK(LINE)		
△ F201		*	F53-0048-08	FUSE (AC125V 160MA)		
△ L201 △ T201 X201 X202 X203		*	L33-0354-08 L13-0318-08 L77-1437-08 L78-0071-08 L78-0072-08	LINE FILTER LINE TRANSFORMER CRYSTAL RESONATOR(32.768KHz) CERAMIC RESONATOR CERAMIC RESONATOR		
X204 X205		*	L78-0074-08 L78-0093-08	CERAMIC RESONATOR(3.58MHz) CERAMIC RESONATOR(7.68MHz)		
△ PH201 △ PH202 △ PH203		*	PS2501-2 PS2532-1 PS2501-1	PHOTO COUPLER PHOTO COUPLER PHOTO COUPLER		
R201 R202, 203 R204 R205 △ R206			RK73FB2A473J RK73FB2A222J RK73FB2A102J RK73FB2A473J R92-1256-05	CHIP R 47K J 1/10W CHIP R 2.2K J 1/10W CHIP R 1.0K J 1/10W CHIP R 47K J 1/10W FIXED R 2.2K 1/4W		
△ R207 △ R209 △ R210 △ R211 △ R212			RK73FB2A222J RK73FB2A221J RK73FB2A104J RK73FB2A332J RK73FB2A472J	CHIP R 2.2K J 1/10W CHIP R 220 J 1/10W CHIP R 100K J 1/10W CHIP R 3.3K J 1/10W CHIP R 4.7K J 1/10W		
△ R213 △ R214 △ R215 △ R216 △ R217			RK73FB2A104J RK73FB2A223J RK73FB2A473J RK73FB2A221J RK73FB2A103J	CHIP R 100K J 1/10W CHIP R 22K J 1/10W CHIP R 47K J 1/10W CHIP R 220 J 1/10W CHIP R 10K J 1/10W		
△ R218 R219 R220 R221 R222		*	R92-1292-08 RK73FB2A473J RK73FB2A101J RK73FB2A680J RK73FB2A470J	FIXED R 82 1W CHIP R 47K J 1/10W CHIP R 100 J 1/10W CHIP R 68 J 1/10W CHIP R 47 J 1/10W		
R223 R224 R225 R226 R227			RK73FB2A473J RK73FB2A472J RK73FB2A103J RK73FB2A474J RK73FB2A124J	CHIP R 47K J 1/10W CHIP R 4.7K J 1/10W CHIP R 10K J 1/10W CHIP R 470K J 1/10W CHIP R 120K J 1/10W		
R228 R229 R230 R231 R232			RK73FB2A104J RK73FB2A472J RK73FB2A684J RK73FB2A104J RK73FB2A562J	CHIP R 100K J 1/10W CHIP R 4.7K J 1/10W CHIP R 680K J 1/10W CHIP R 100K J 1/10W CHIP R 5.6K J 1/10W		
R233 R234, 235 R237 R238 R239			RK73FB2A153J RK73FB2A102J RK73FB2A183J R92-0679-05 RK73FB2A151J	CHIP R 15K J 1/10W CHIP R 1.0K J 1/10W CHIP R 18K J 1/10W CHIP R 0 ΩHM CHIP R 150 J 1/10W		
R240 R241			RK73FB2A472J RK73FB2A682J	CHIP R 4.7K J 1/10W CHIP R 6.8K J 1/10W		

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
R242			RK73FB2A474J	CHIP R 470K J 1/10W		
R243			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R244			RK73FB2A105J	CHIP R 1.0M J 1/10W		
R245			RK73FB2A473J	CHIP R 47K J 1/10W		
R246			RK73FB2A103J	CHIP R 10K J 1/10W		
R247			RK73FB2A154J	CHIP R 150K J 1/10W		
R248			RK73FB2A155J	CHIP R 1.5M J 1/10W		
R249-251			RK73FB2A154J	CHIP R 150K J 1/10W		
R253			RK73FB2A474J	CHIP R 470K J 1/10W		
R254			RK73FB2A473J	CHIP R 47K J 1/10W		
R255, 256			RK73FB2A104J	CHIP R 100K J 1/10W		
R257			RK73FB2A223J	CHIP R 22K J 1/10W		
R258			RK73FB2A562J	CHIP R 5.6K J 1/10W		
R259			RK73FB2A124J	CHIP R 120K J 1/10W		
R260			RK73FB2A224J	CHIP R 220K J 1/10W		
R261			RK73FB2A823J	CHIP R 82K J 1/10W		
R262			RK73FB2A104J	CHIP R 100K J 1/10W		
R263			RK73FB2A684J	CHIP R 680K J 1/10W		
R264			RK73FB2A334J	CHIP R 330K J 1/10W		
R265			RK73FB2A563J	CHIP R 56K J 1/10W		
R266			RK73FB2A333J	CHIP R 33K J 1/10W		
R267			RK73FB2A103J	CHIP R 10K J 1/10W		
R268			RK73FB2A121J	CHIP R 120 J 1/10W		
R269			RK73FB2A331J	CHIP R 330 J 1/10W		
R270			RK73FB2A471J	CHIP R 470 J 1/10W		
R271			RK73FB2A154J	CHIP R 150K J 1/10W		
R272			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R273			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R279			RK73FB2A103J	CHIP R 10K J 1/10W		
R280			RK73FB2A682J	CHIP R 6.8K J 1/10W		
R281			RK73FB2A100J	CHIP R 10 J 1/10W		
R282			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R283			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R284			RK73FB2A221J	CHIP R 220 J 1/10W		
R285			RK73FB2A331J	CHIP R 330 J 1/10W		
R286			RK73FB2A183J	CHIP R 18K J 1/10W		
R287			RK73FB2A473J	CHIP R 47K J 1/10W		
R288			RK73FB2A105J	CHIP R 1.0M J 1/10W		
R289			RK73FB2A103J	CHIP R 10K J 1/10W		
R290			RK73FB2A473J	CHIP R 47K J 1/10W		
R291			RK73FB2A103J	CHIP R 10K J 1/10W		
R292			RK73FB2A124J	CHIP R 120K J 1/10W		
R293			RK73FB2A473J	CHIP R 47K J 1/10W		
R294, 295			RK73FB2A103J	CHIP R 10K J 1/10W		
R296			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R297			RK73FB2A393J	CHIP R 39K J 1/10W		
R298			RK73FB2A473J	CHIP R 47K J 1/10W		
R299			RK73FB2A334J	CHIP R 330K J 1/10W		
R300			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R301			RK73FB2A394J	CHIP R 390K J 1/10W		
R302			RK73FB2A104J	CHIP R 100K J 1/10W		
R303			RK73FB2A682J	CHIP R 6.8K J 1/10W		
R304			RK73FB2A473J	CHIP R 47K J 1/10W		
R305			RK73FB2A101J	CHIP R 100 J 1/10W		
R306			RK73FB2A224J	CHIP R 220K J 1/10W		

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
R307-309 R310 R311-317 R318 R319-321			RK73FB2A473J RK73FB2A103J RK73FB2A473J RK73FB2A103J RK73FB2A473J	CHIP R 47K J 1/10W CHIP R 10K J 1/10W CHIP R 47K J 1/10W CHIP R 10K J 1/10W CHIP R 47K J 1/10W		
R322 R323 R324 R325 R326			RK73FB2A103J RK73FB2A473J RK73FB2A106J RK73FB2A334J RK73FB2A105J	CHIP R 10K J 1/10W CHIP R 47K J 1/10W CHIP R 10M J 1/10W CHIP R 330K J 1/10W CHIP R 1.0M J 1/10W		
R327 R329 R330 R331-343 R344-346			RK73FB2A222J RK73FB2A473J RK73FB2A103J RK73FB2A473J RK73FB2A103J	CHIP R 2.2K J 1/10W CHIP R 47K J 1/10W CHIP R 10K J 1/10W CHIP R 47K J 1/10W CHIP R 10K J 1/10W		
R347-352 R353 R354 R355 R356			RK73FB2A473J RK73FB2A682J RK73FB2A102J RK73FB2A473J RK73FB2A334J	CHIP R 47K J 1/10W CHIP R 6.8K J 1/10W CHIP R 1.0K J 1/10W CHIP R 47K J 1/10W CHIP R 330K J 1/10W		
R357 R360 R361, 362 R363 R364			RK73FB2A102J RK73FB2A105J RK73FB2A684J RK73FB2A103J RK73FB2A105J	CHIP R 1.0K J 1/10W CHIP R 1.0M J 1/10W CHIP R 680K J 1/10W CHIP R 10K J 1/10W CHIP R 1.0M J 1/10W		
R366 R367, 368 R369-372 R373, 374 R375			RK73FB2A473J RK73FB2A472J RK73FB2A473J RK73FB2A332J RK73FB2A221J	CHIP R 47K J 1/10W CHIP R 4.7K J 1/10W CHIP R 47K J 1/10W CHIP R 3.3K J 1/10W CHIP R 220 J 1/10W		
R376 R377 R378 R379 R402			RK73FB2A104J R92-0679-05 RK73FB2A154J RD14BB2C101J RK73FB2A183J	CHIP R 100K J 1/10W CHIP R 0 OHM CHIP R 150K J 1/10W RD 100 J 1/6W CHIP R 18K J 1/10W		
R403 R404 R405, 406 R407, 408 R409, 410			RK73FB2A101J RK73FB2A104J RK73FB2A474J RK73FB2A103J RK73FB2A102J	CHIP R 100 J 1/10W CHIP R 100K J 1/10W CHIP R 470K J 1/10W CHIP R 10K J 1/10W CHIP R 1.0K J 1/10W		
R411 R412 R413 R414 R415			RK73FB2A104J RK73FB2A103J RK73FB2A222J RK73FB2A183J RK73FB2A104J	CHIP R 100K J 1/10W CHIP R 10K J 1/10W CHIP R 2.2K J 1/10W CHIP R 18K J 1/10W CHIP R 100K J 1/10W		
R416 VR101		*	RK73FB2A183J R05-0407-08	CHIP R 18K J 1/10W SPEAKER VOLUME 1K(B)		
S201 S202 S203 ZN201 ZN202		*	S40-2373-08 S62-0419-08 S31-0411-08 SNR-361KD07 SNR-271KD07	HOOK SWITCH DIAL MODE SWITCH(PULSE/TONE) RINGER VOLUME SW(OFF/LOW/HIGH) SURGE ABSORB SURGE ABSORB		
D201 D202			1SR139-100 MTZJ5.6B	DIODE DIODE		

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MAIN PCB ASSY (W02-1721-08)

KEY PCB ASSY (W02-1722-08)

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
△ D203			RD13FB	DIORD		
△ D204, 205			1SS136	DIORD		
△ D206, 207			MTZJ27B	DIORD		
△ D208			1SS136	DIORD		
△ D209			S1ZB40	DIORD		
△ D211-212			MTZJ7.5B	DIORD		
△ D213-215			1SS136	DIORD		
D217			1SS136	DIORD		
D218			MTZJ5.6B	DIORD		
IC201		*	M37413M6H-171	IC (CPU)		
IC202		*	NJM3414M	IC (OPE AMP)		
IC203, 204		*	BA15218F	IC (OPE AMP)		
IC205		*	TC35219P	IC (DTMF GENERATOR)		
IC206		*	MT8870CE	IC (DTMF RECEIVER)		
IC207		*	TSP53C33ANL	IC (VOICE COMPOSITE)		
IC208, 209			TMM41256AZ-15	IC (256K 1bit D-RAM) etc		
IC210			TMS3477NL	IC (VOICE RECORDING/PLAY BACK)		
IC211, 212		*	UPD4066B	IC (ANALOGUE GATE)		
IC213			M5278D56	IC (3-pin REGULATOR)		
IC214			NJM386	IC (POWER AMP)		
IC215			PST572LMT	IC (RESET)		
IC401		*	MC34118DW	IC (HANDS FREE)		
Q201			2SC2412K	TRANSISTOR		
△ Q202			2SA1727	TRANSISTOR		
△ Q204			2SA1037K	TRANSISTOR		
△ Q205			2SC2412K	TRANSISTOR		
△ Q206			2SA1037K	TRANSISTOR		
Q207-211			2SC2412K	TRANSISTOR		
Q212			DTC144EK	TRANSISTOR		
Q213			2SD1858	TRANSISTOR		
Q214			DTA114YK	TRANSISTOR		
Q215-217			DTC144EK	TRANSISTOR		
Q218			DTA114YK	TRANSISTOR		
Q219			DTC144EK	TRANSISTOR		
△ Q221			DTC144EK	TRANSISTOR		
Q222			DTC144EK	TRANSISTOR		
Q223			2SA1037K	TRANSISTOR		
Q224			DTC125TK	TRANSISTOR		
Q401			DTC144ES	TRANSISTOR		
KEY PCB ASSY (W02-1722-08)						
CN101			E40-5526-05	FLAT CABLE CONNECTOR(19pin)		
R101-105			RD14BB2C391J	RD 390 J 1/6W		
R107-110			RD14BB2C680J	RD 68 J 1/6W		
R111-122			RD14BB2C101J	RD 100 J 1/6W		
R123			RD14BB2C332J	RD 3.3K J 1/6W		
R124			RD14BB2C104J	RD 100K J 1/6W		
R125-127			RD14BB2C391J	RD 390 J 1/6W		
S101-103			S40-1445-08	TACTILE SWITCHES		
S104-121			S70-0412-08	TACTILE SWITCHES		
S122			S70-0412-08	TACTILE SWITCH (MUTE)		
S123			S70-0412-08	TACTILE SWITCH (SP-PHONE)		
D101-103			SEL3510G	LED (GREEN)		
D104, 105			SEL3810A	LED (ORANGE)		

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
D107-118 D119,120 D121 D122 D123			SEL3510G 1SS136 SEL3810A SEL3510G SEL3810A	LED (GREEN) DIODE LED (ORANGE) LED (GREEN) LED (ORANGE)		
Q101-104 Q105			2SC4038 DTA144TL	TRANSISTOR TRANSISTOR		

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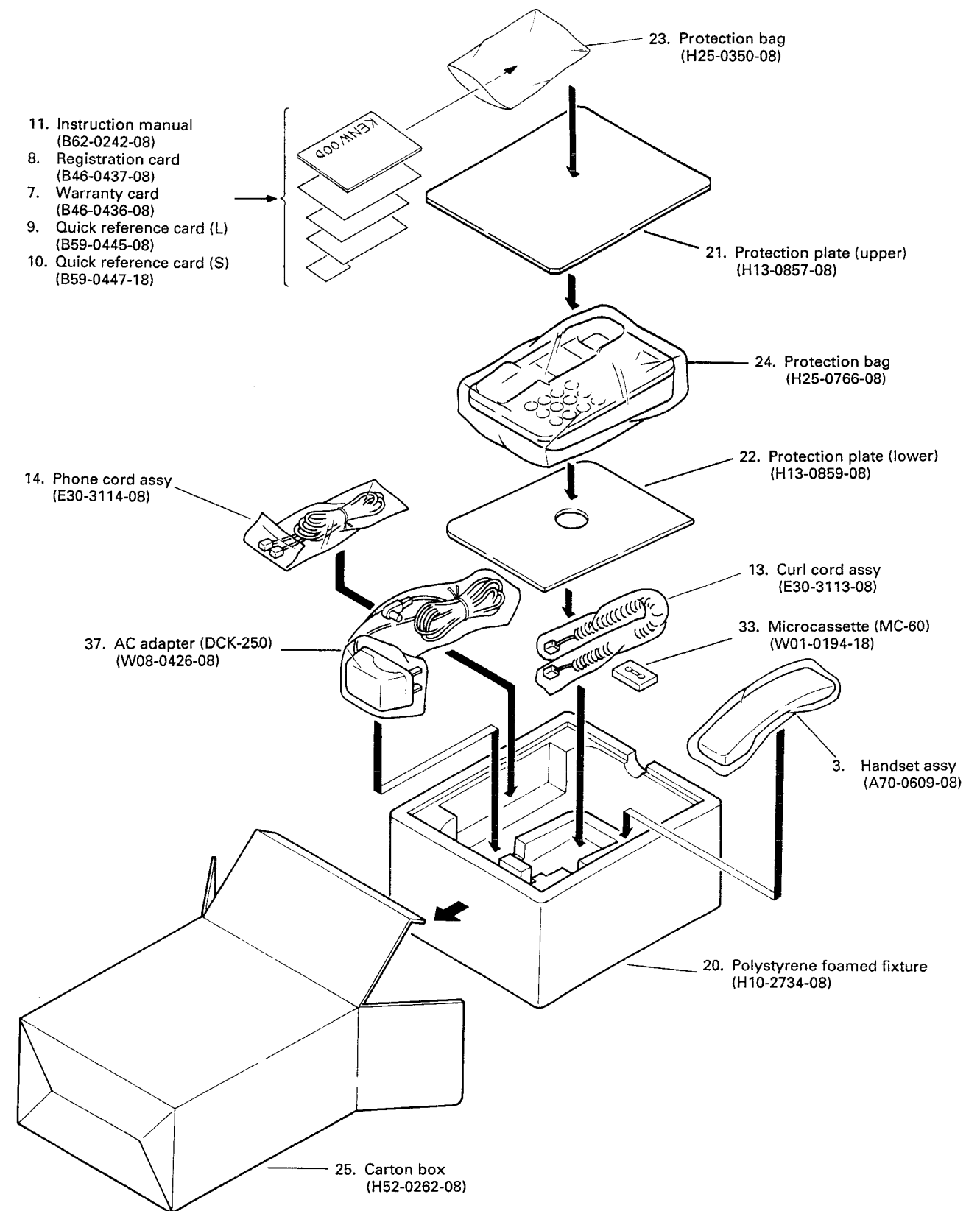
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PACKING



IS-M40

IS-M40

QUICK REFERENCE GUIDE

SPECIFICATIONS

IS-M40 QUICK REFERENCE GUIDE

Set Record Time...	▼ Leave Handset in Cradle, press and hold SPEED/SET. Press # and then 3. Enter 0 (no record), 1 (minute), 2 (minutes), or 3 (voice). Release SPEED/SET. To check setting, press SPEED/SET, #, then 3.
Set Ringer Counter...	▼ Leave Handset in Cradle, press and hold SPEED/SET. Press # and then 4. Enter 2, 3, 4, 5, or 6 rings. Release SPEED/SET. To check setting, press SPEED/SET, #, then 4.
Set Auto-Answer...	▼ Press ANSWER. Greeting Message will play before Auto-Answer is on.
Play messages...	▼ Press PLAY. You'll hear message count then messages. To hear messages again, press PLAY.
▼ SECRET CALL	▼ Caller must know Secret Call Code.
Secret Call Code...	▼ Leave Handset in Cradle, press and hold SPEED/SET. Press # and then 2. Enter 4-digit code. Release SPEED/SET. To check setting, press SPEED/SET, #, then 2.
Secret Call On (Off)...	▼ Press SECRET CALL for two or more seconds. (Press again for off).
▼ REMOTE	▼ Before using, record Greeting Message and set Remote Access Code.
Remote Access Code...	▼ Leave Handset in Cradle, press and hold SPEED/SET. Press # and then 1. Enter 4-digit code. Release SPEED/SET. To check setting, press SPEED/SET, #, then 1.
Message Transfer on (Off)...	▼ Press TRANSFER to send to number in Speed Dial 0. (Press again for off).
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IS-M40 QUICK REFERENCE GUIDE

▼ TELEPHONE	▼ Dial keys flash when making or receiving a call.
Hands-Free...	▼ Leave Handset in Cradle, press SP-PHONE. Press MUTE to silence your conversation to called party.
Hold a call...	▼ Press HOLD. Dial keys will flash. To release Hold, press HOLD again or lift Handset from Cradle.
Redial a call...	▼ Press REDIAL. To check number, press SPEED/SET then REDIAL.
Auto Redial a call...	▼ Leave Handset in Cradle, press REDIAL and number of redials (1-9). REDIAL flashes (one minute), then dials. Repeats until call connects.
Store a number in Speed Dial Memory...	▼ Leave Handset in Cradle, press and hold SPEED/SET and enter memory location (0-9). Enter phone number. Release SPEED/SET.
Check a Speed Dial number...	▼ Leave Handset in Cradle, press SPEED/SET followed by memory location (0-9) to hear number.
Speed Dial Call...	▼ Press SPEED/SET, followed by Speed Dial memory number (0-9).
Send Tones on a Pulse call...	▼ After call is connected, press *. Enter numbers as instructed.
▼ ANSWERING	▼ Make sure tape is loaded and a Greeting Message is recorded.
Recording a Normal (Dialogue) Greeting Message...	▼ NORMAL : Press and hold ANSWER until Handset is lifted. ANSWER, PLAY, and REC will flash. Press REC, you'll hear "Please Wait." After beep, talk into Handset. Press STOP when done to hear Greeting Message. (DIALOGUE) : Same as above, but press REC again, during recording, to insert pause. After beep, talk again.

Model	IS-M40 integrated answering telephone
FCC registration No.	ALIJPJN-65261-MT-E
Dial speed	Tone (DTMF)/pulse (10pps)
Greeting message (OGM)	Recorded on a microchip Recording time is 16 seconds
Recorded message (ICM)	Micro cassette (MC-60)
Power source	AC adaptor DCK-250 (Input AC 120V 60Hz, output DC 9V 250mA) 2W approx. (normal) 4W approx. (maximum)
Ringer equivalence (REN)	1.1B
Dimensions	156 (W) x 213.6 (D) x 69.4 (H) mm (with handset) (6-5/32" x 8-13/32" x 2-23/32")
Weight	1.0kg (2.2lbs) (With AC adaptor)

Notes :Circuit and ratings are subject to change without notice due advancements in technology.